Waukesha Cherry-Burrell®
AN SPX BRAND

Operation and Maintenance Manual
W-Series Mix Proof Valves
(in O.D. Tubing Sizes)
W71, W72RS, and W73

Read and understand this manual
prior to installing, operating or servicing this equipment.

Waukesha Cherry-Burrell Warranty

Seller warrants its products to be free from defect in materials and workmanship for a period of one (1) year from the date of shipment. This warranty shall not apply to products which require repair or replacement due to normal wear and tear or to products which are subjected to accident, misuse or improper maintenance. This warranty extends only to the original Buyer. Products manufactured by others but furnished by Seller are exempted from this warranty and are limited to the original manufacturer's warranty.

Seller's sole obligation under this warranty shall be to repair or replace any products that Seller determines, in its discretion, to be defective. Seller reserves the right either to inspect the products in the field or to request their prepaid return to Seller. Seller shall not be responsible for any transportation charges, duty, taxes, freight, labor or other costs. The cost of removing and/or installing products which have been repaired or replaced shall be at Buyer's expense.

Seller expressly disclaims all other warranties, express or implied, including without limitation any warranty of merchantability of fitness for a particular purpose. The foregoing sets forth Seller's entire and exclusive liability, and Buyer's exclusive and sole remedy, for any claim of damages in connection with the sale of products. In no event shall Seller be liable for any special consequential incidental or indirect damages (including without limitation attorney's fees and expenses), nor shall Seller be liable for any loss of profit or material arising out of or relating to the sale or operation of the products based on contract, tort (including negligence), strict liability or otherwise.

Shipping Damage or Loss

If equipment is damaged or lost in transit, file a claim at once with the delivering carrier. The carrier has signed the Bill of Lading acknowledging that the shipment has been received from WCB in good condition. WCB is not responsible for the collection of claims or replacement of materials due to transit shortages or damages.

Warranty Claim

Warranty claims must have a **Returned Goods Authorization (RGA)** from the Seller before returns will be accepted.

Claims for shortages or other errors, exclusive of transit shortages or damages, must be made in writing to Seller within ten (10) days after delivery. Failure to give such notice shall constitute acceptance and waiver of all such claims by Buyer.

Safety

READ AND UNDERSTAND THIS MANUAL
PRIOR TO INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT

Waukesha Cherry-Burrell recommends users of our equipment and designs follow the latest Industrial Safety Standards. At a minimum, these should include the industrial safety requirements established by:

1. Occupational Safety and Health Administration (OSHA), Title 29 of the CFR
   Section 1910.212- General Requirements for all Machines

2. National Fire Protection Association, ANSI/NFPA 79
   ANSI/NFPA 79- Electrical Standards for Industrial Machinery

3. National Electrical Code, ANSI/NFPA 70
   ANSI/NFPA 70- National Electrical Code
   ANSI/NFPA 70E- Electrical Safety Requirement for Employee Workplaces

4. American National Standards Institute, Section B11

Attention: Servicing energized industrial equipment can be hazardous. Severe injury or death can result from electrical shock, burn, or unintended actuation of controlled equipment. Recommended practice is to disconnect and lockout industrial equipment from power sources, and release stored energy, if present. Refer to the National Fire Protection Association Standard No. NFPA70E, Part II and (as applicable) OSHA rules for Control of Hazardous Energy Sources (Lockout-Tagout) and OSHA Electrical Safety Related Work Practices, including procedural requirements for:

- Lockout-tagout
- Personnel qualifications and training requirements
- When it is not feasible to de-energize and lockout-tagout electrical circuits and equipment before working on or near exposed circuit parts

Locking and Interlocking Devices: These devices should be checked for proper working condition and capability of performing their intended functions. Make replacements only with the original manufacturer's renewal parts or kits. Adjust or repair in accordance with the manufacturer's instructions.

Periodic Inspection: Industrial equipment should be inspected periodically. Inspection intervals should be based on environmental and operating conditions and adjusted as indicated by experience. At a minimum, an initial inspection within 3 to 4 months after installation is recommended. Inspection of the electrical control systems should meet the recommendations as specified in the National Electrical Manufacturers Association (NEMA) Standard No. ICS 1.3, Preventative Maintenance of Industrial Control and Systems Equipment, for the general guidelines for setting-up a periodic maintenance program.

Replacement Equipment: Use only replacement parts and devices recommended by the manufacturer to maintain the integrity of the equipment. Make sure the parts are properly matched to the equipment series, model, serial number, and revision level of the equipment.

Warnings and cautions are provided in this manual to help avoid serious injury and/or possible damage to equipment:

DANGER: *marked with a stop sign.*
Immediate hazards which WILL result in severe personal injury or death.

WARNING: *marked with a warning triangle.*
Hazards or unsafe practices which COULD result in severe personal injury or death.

CAUTION: *marked with a warning triangle.*
Hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

Care of Stainless Steel

Stainless Steel Corrosion

Corrosion resistance is greatest when a layer of oxide film is formed on the surface of stainless steel. If film is disturbed or destroyed, stainless steel becomes much less resistant to corrosion and may rust, pit or crack.

Corrosion pitting, rusting and stress cracks may occur due to chemical attack. Use only cleaning chemicals specified by a reputable chemical manufacturer for use with 300 series stainless steel. Do not use excessive concentrations, temperatures or exposure times. Avoid contact with highly corrosive acids such as hydrofluoric, hydrochloric or sulfuric. Also avoid prolonged contact with chloride-containing chemicals, especially in presence of acid. If chlorine-based sanitizers are used, such as sodium hypochlorite (bleach), do not exceed concentrations of 150 ppm available chlorine, do not exceed contact time of 20 minutes, and do not exceed temperatures of 104°F (40°C).

Corrosion discoloration, deposits or pitting may occur under product deposits or under gaskets. Keep surfaces clean, including those under gaskets or in grooves or tight corners. Clean immediately after use. Do not allow equipment to set idle, exposed to air with accumulated foreign material on the surface.

Corrosion pitting may occur when stray electrical currents come in contact with moist stainless steel. Ensure all electrical devices connected to the equipment are correctly grounded.

Elastomer Seal Replacement Following Passivation

Passivation chemicals can damage product contact areas of WCB equipment. Elastomers (rubber components) are most likely to be affected. Always inspect all elastomer seals after passivation is completed. Replace any seals showing signs of chemical attack. Indications may include swelling, cracks, loss of elasticity or any other noticeable changes when compared with new components.

Introduction

For control top information, please refer to publication 95-03077 (three-piece); for two-piece, see publication 95-03083. For additional product information, please see our web site at http://www.spxprocessequipment.com/sites/wcb/literature.htm.

General Information

Information in this manual should be read by all personnel involved in installation, setup, operation and maintenance.

Always use installation tools and lubricants recommended by Waukesha Cherry-Burrell. Waukesha Cherry-Burrell products are subject to intensive intermediate and final leakage and functional tests.

Waukesha Cherry-Burrell Mix Proof valves meet 3A and EHEDG standards for sanitation, design, and style.

Double-Seat Mix Proof valves provide safe separation of dissimilar products within the same valve body. WCB offers several basic valve types:

- W71 Series for standard shut-off service
- W73 Series for divert applications
- W72RS Series for standard shut-off service

W72RS Mix Proof valves feature a lower radial seal for spill-free operation when opening or closing.

Factory Inspection

Each Waukesha Cherry-Burrell valve is shipped completely assembled, lubricated and ready for use.

Models and Specifications

Materials

- Product Wetted: ASTM 316L (UNS-S31603); (DIN-1.4404) AL6XN upon request
- Non-Product: ASTM 304 (UNS-S30400); (DIN-1.4301)
- Elastomers: EPDM (optional) FKM (standard) FFKM upon request

Equipment Serial Number

Waukesha Cherry-Burrell valves are identified by a serial number found on the label on the actuator cylinder.

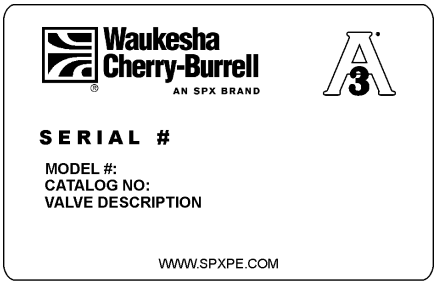


Figure 1 - Serial Number Label

Operating Parameters

Temperature Range:

The recommended operating temperature is determined by the material used for the seals.

No special precautions are required for applications within a temperature range of 32°F to 180°F (0°C to 82°C).

For applications above 190°F (88°C), clearances can be affected by excessive thermal expansion when the valve is installed in compact fabrications or manifolds. Valve bodies have thicker cross-sections than tubing, but thermal expansion can affect clearances in interconnecting piping sections.

If operating below 32°F (0°C):

- Control air must have an appropriately low dew point.
- Valve stems must be protected from icing to ensure long working life for valve stem seals.

Solenoid valves may not be used in the control module in room environments below 32°F (0°C) and over 180°F (82°C), as function cannot be guaranteed.

Fluorelastomer (FKM)
Thermal Range of Application:
- 32°F to 375°F (0°C to 190°C)

Chemical Resistance:
- Silicone oil and grease
- Aliphatic, chlorinated, and aromatic hydrocarbons
- Oils and fats
- Ozone, aging and weather resistant

Contact WCB Application Engineering for other fluid compatibility.

Not compatible with:
- Superheated steam
- Formic and acetic acids

FKM seals comply with FDA regulations.

EPDM
Thermal Range of Application:
- 0°F to 275°F (-18°C to 135°C)

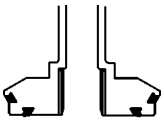
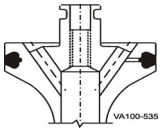
Chemical Resistance:
- Hot water and steam up to 275°F (135°C)
- Many organic and inorganic acids
- Cleaning agents, soda and potassium alkalis
- Silicone oil and grease
- Many polar solvents (alcohols, ketones, esters)
- Ozone, aging and weather resistant

Contact WCB Application Engineering for other fluid compatibility.

Not compatible with:
- Mineral oil products (oils, greases and fuels)

EPDM seals comply with FDA regulations.

Seat Options

SEAT TYPE		MATERIAL / MAXIMUM TEMP.	
 VA100-638	Tri Ring (TR) Compression Seal: Upper on W71/W73/W72RS Lower on W71/W73	EPDM	Operation 280°F (137°C) Sterile 275°F (135°C)
		or	
 VA100-535	Radial: Lower on W72RS	FKM	Operation 350°F (176°C) Sterile (Consult Factory)

For higher temperature applications than those listed, please consult the factory.
*Operating conditions such as flow rate and pressure must be considered when operating near the maximum temperature rating. Contact the Factory for FFKM.

Pressure Ratings

Operating Pressure: 1-1/2" - 3" sizes = 150 psi (10.3 bar)
4" size = 90 psi (6.2 bar)
6" size = Contact Factory

Holding Pressure: All sizes = 150 psi (10.3 bar)

Installation

CAUTION: *When installing the valve, ensure that no foreign materials (e.g. tools, screws, welding wire, lubricants, cloths, etc.) are enclosed in the system.*

Location

The valve must be in a vertical position to ensure that the vent/drain outlet system functions properly.

Locate the valve for easy access for inspection.

Ensure that the valves and pipe systems drain properly. The two-piece body option enables the positions of the connections to be adjusted in relation to each other.

CAUTION: *Products must be isolated away from valve prior to maintenance.*

Welding Instructions

Prior to installing, thoroughly inspect each valve. When using buttweld two-piece body valves, clamp connections must be used on either the upper or lower body to allow for servicing of the o-ring seal between the bodies. This does not apply single-piece bodies.

Mix proof valves with welded connections require the following to be performed before installation:

CAUTION: *Before attempting to buttweld an automatic valve into a line, disassemble the body from the actuator. Dissipate heat away from the valve body to prevent warping.*

- Prior to installation, remove the stem actuator assembly and lower bearing carrier.
- Remove all seals from the body.
- Weld the body into position, ensuring that the connection is free of tension and distortion.

CAUTION: *Welding must be carried out by qualified personnel.*

For manifold welding, fixture tables are recommended. Matrix manifold welding requires a controlled deliberate process to maintain the alignment of the parts.

Air Supply

Install the valves using dry, filtered air. Lubrication is not required. If using lubricated air, refer to the solenoid manufacturer's specifications.

Flow Direction

The valves should be installed to close against the flow to prevent hammering.

Fittings

When using suitable fittings, Mix Proof valves with detachable connections can be installed in a pipe system per the fitting requirements. The valve must be installed free of tension. After the valve is installed in the pipe system, attach the control air hoses and connect them to the electrical supply.

Contact WCB at 1-800-252-5200 for more information on our wide variety of fittings for all applications.

Pipeline Support

Install adequate supports to prevent strain on the fittings, valves and equipment connections.

1. Install supports at least every 10 feet on straight runs of piping. (Figure 2, item C).
2. Install supports on both sides of the valves as close as possible to the connections. (Figure 2, item D).
3. Install supports at each change of pipeline direction. (Figure 2, item E and F).
4. For pipelines passing through walls, floors or ceilings, provide at least 1 inch (25 mm) of clearance around the pipe to allow for expansion and contraction. (Figure 2, item G).

CAUTION: *In higher temperature applications, ensure proper accomodation for thermal expansion in the pipeline design to minimize stresses on the valve bodies. Excessive mechanical and thermal stresses can distort and damage the valve bodies.*

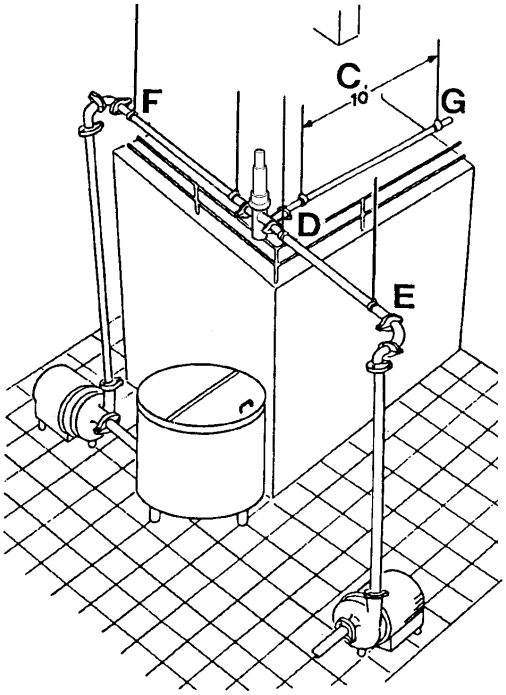


Figure 2 - Pipeline Support

Installing Valve Manifolds

Install automatic valve manifolds with a uniform pitch for proper drainage. Elevate one corner of the cluster and pitch 1/16" per foot (1.59 mm per meter) if desired. Arrange the supports for the floor-mounted valve manifolds to provide alignment of the inlet and outlet lines.

Installing the Valve

1. If solenoids are mounted in a control top, connect the air supply lines to "air in." If solenoids are mounted externally from the control top, connect the air lines as explained in "Solenoid Valve Port Connections" on page 12.

2. Using caution, lift the actuator assembly and set the actuator in the body assembly.

3. Lower the valve slowly into the body, making sure the lower stem enters the lower bearing carrier.

4. Tightly clamp the yoke/body flange.

5. Connect the air lines to A, B and C. See Figure 8 on page 12.

6. Connect the electrical control cord to the valve through location A shown in Figure 3.

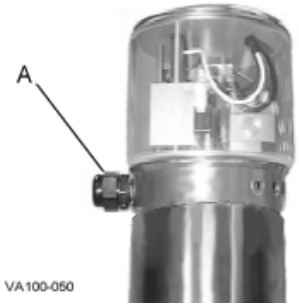


Figure 3 - Control Top Wire Connection Point

7. Operate the valve through the four conditions (closed, open, upper seat cleaning and lower seat cleaning). See "Solenoid/Valve Position" on page 12.

Quality of Control Air to Control Module

Do not exceed the following values:

- Suspended solids content:
  Particle size: 5 microns max.
  Particle Density: 5 mg/m^3 max. (= quality class 3)
- Water content: Dewpoint +35°F (+1.6°C)
  (= quality class 3). For applications at great elevations or at low ambient temperatures, the dewpoint changes.
- Oil content (if possible, without oil): Up to 25mg/m^3 max. oil (= quality class 5).

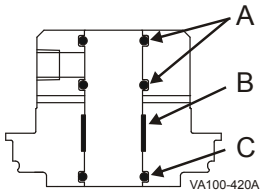
External Flush (Figure 4)

Liquid Vent Cavity Only

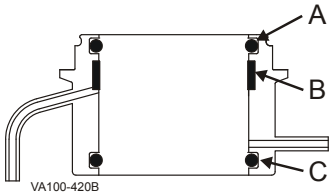
Use Upper Stem Flush Adapter

Liquid Vent Cavity and Lower Stem

Use both Upper Stem Flush Adapter and Lower Stem Flush/Steam Adapter.



Upper Stem Flush Adapter



Lower Stem Flush/Steam Adapter

Figure 4 - Top and Bottom Flush

Options allow for the liquid flush of the vent cavity and leakage channel alone or with the lower stem flush.

Connect the cavity cleaning supply to a suitable water supply to flush the vent/drain (Figure 5) during the operation of the processing system.

The flush supply line can be connected to the pipe system by 1/4" (6 mm) rigid or poly flow tubing. The flush supply is blocked when the valve is open.

Connect the supply line to the adapter connection with poly flow tubing (Figure 5).

WARNING: *During CIP cleaning and valve opening (W71/W73), fluid escapes from the drain port. Drain this off to prevent a possible hazard to personnel.*

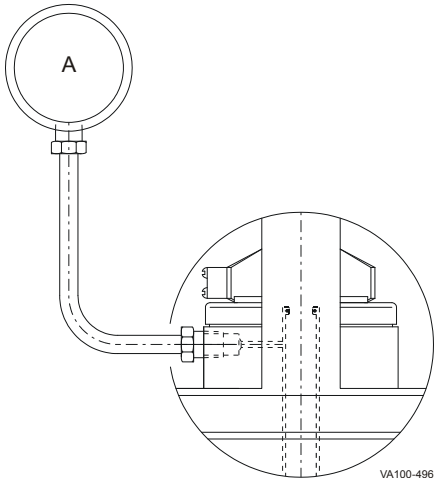


Figure 5 - Connection of Flush Supply

Regulate the flush supply (Figure 5, item A) for pressures of 30 psi minimum, 50 psi maximum.

The maximum solution temperature is 180°F (60°C).

WARNING: *Operation of cavity cleaning must fall within the fail-safe control system. See "Cleaning" on page 16.*

WARNING: *Proper precaution should be taken to safeguard the flush water supply, such as installing backflow prevention devices.*

External Flush (Figure 6)

Steam Vent Cavity, Upper and Lower Stem

Use both Upper Stem Steam Flush Adapter and Lower Stem Steam Adapter.

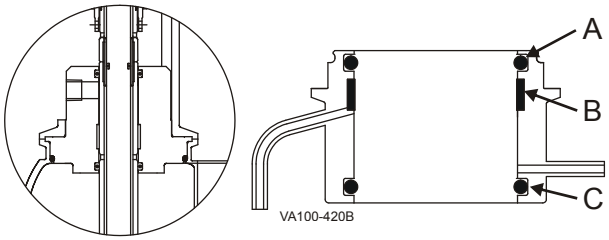


Figure 6 - External Steam Barrier - upper stem

This option allows continuous steaming of the vent cavity (in both open and closed positions), upper and lower stems.

To steam flush the upper and/or lower stem as well as the vent cavity, the Mix Proof Valve must be ordered with the Steam Flush for stem and vent cavity. This option (Figure 7) contains the following components:

- External flush connection, 1/4" NPT.
- Modified adapter with removed o-rings to flush the stem.
- Jacket with 1/4" Tube (S.S.) on lower balancer to flush the lower stem (balancer).
- EPDM gaskets for all seals in the wetted area.

DANGER: *Valves equipped with the steam flush option for stem and vent cavity can produce high temperatures and steam hazards that may result in personal injury or death.*

Installation

Installation of a steam flush system on a W-Series Mix Proof valve should be done only by a licensed Steam Fitter.

The valve must be installed vertically to drain out any steam/condensate and have a drain funnel placed directly below it. Refer to Figure 7 to see the shut-off valves in the supply lines.

WARNING: *The W-Series Mix Proof Valve equipped with the steam flush option for stem and vent cavity is designed ONLY FOR LOW-PRESSURE, PRODUCT-COMPATIBLE SATURATED STEAM with a maximum pressure of 10 psig (0.65 bar) = 240°F (115°C) temperature.*

Function

The low pressure steam enters through port B of the upper stem steam flush adapter. Steam purges the outside and inside of the upper stem and the vent cavity. Steam exits out the leakage port F.

For steam flushing the outside of the lower stem (balancer), the low pressure steam enters port D and exits at port E.

DANGER: *The steam connection must be shut off and the valve must cool before servicing the valve.*

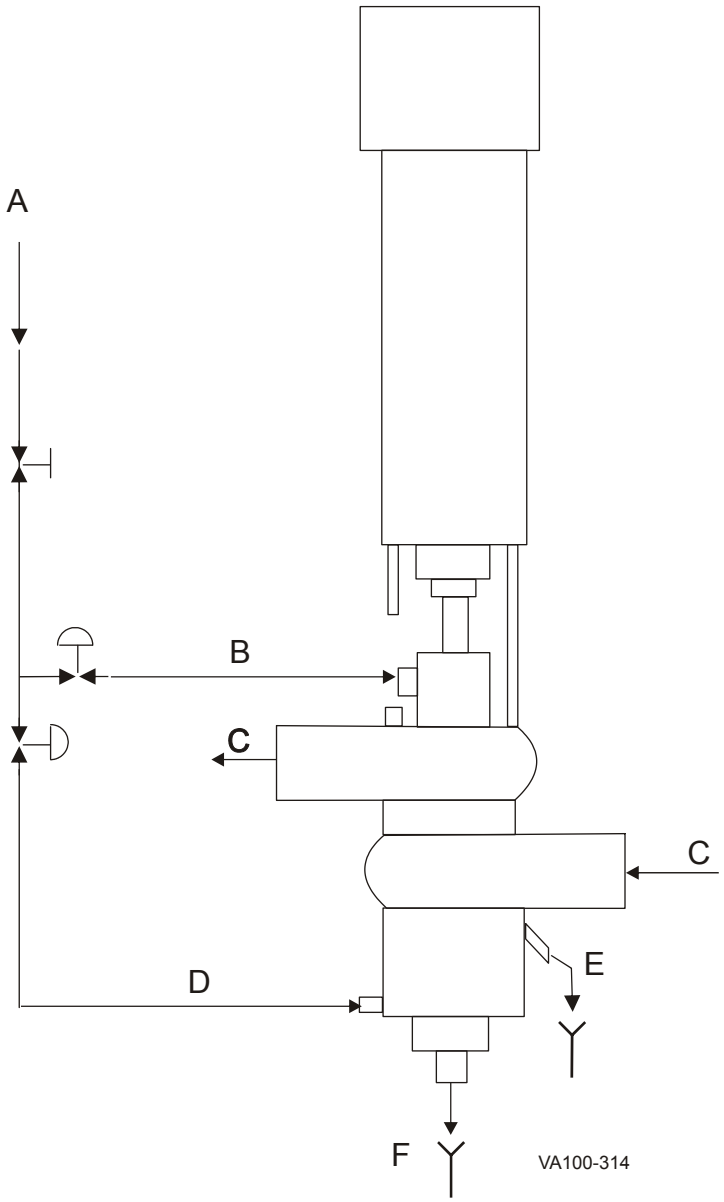


Figure 7 - Steam Flush Option for Stem and Vent Cavity Schematic

A. Saturated Steam (wet steam) Max 10 psig	D. Steam IN (Lower Stem Adapter)
B. Steam IN (Upper Stem Adapter)	E. Steam out of Lower Stem Adapter
C. Product	F. Steam out from vent cavity (leakage port)

Operation

All functions of W-Series mix proof valves are pneumatically controlled using a 72 to 100 psi (4.9 to 6.9 bar) clean air supply.

The valve contains a large and small spring in the valve actuator. The springs hold the valve seats in the closed position.

Large Spring

- Located in top air chamber of cylinder.
- Holds valve in the closed position.

Small Spring

- Located in the extended hub of the upper piston.
- When the valve is open, the spring acts on the upper seat stem to hold the upper and lower plugs together.

Solenoid Valve Port Connections

Up to three air supplies, controlled by solenoid valves, supply air to the valve actuator (Figure 8).

The air supply must be 72 to 100 psi (4.9 to 6.9 bar).

Table 1: Solenoid/Valve Position

Condition	Solenoid A	Solenoid B	Solenoid C
Closed	OFF	OFF	OFF
Open	OFF	ON	OFF
*Upper Seat Cleaning	OFF	OFF	ON
*Lower Seat Cleaning	ON	OFF	OFF

ON = Solenoid energized (OPEN). LED is lit.

OFF = Solenoid de-energized (CLOSED). LED is off.

Solenoids are normally closed.

Air connections are 1/8 NPT.

* Seat lifting is an option which requires (2) two additional air supplies. Non-seat lifting valves (NSL) only have one air inlet (A).

For specific air-routing and solenoid porting, please refer to control module publications 95-03077 (3-Piece) or 95-03083 (2-piece).

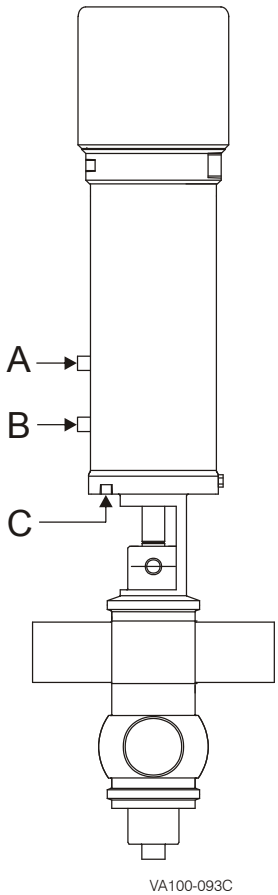
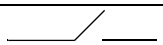


Figure 8 - Solenoid Valve Port Connections

Automatic Fail-Safe System

Table 2: Valve Stem Detection Conditions

Condition	Upper Switch (NO)	Lower Switch (NC)
Switch Symbol		
Valve Closed	0	1
Valve Open	1	0
Valve Closed with Upper Seat Lift	0	1
Valve Closed with Lower Seat Lift	0	0

1 = Energized; LED is lit 0 = De-energized; LED is off

Upper Switch – Sends an input signal when the valve is properly open.

Lower Switch – Sends an input signal when the valve is properly closed.

Test Procedures

Positive Fail-Safe Detection Test

Perform a test to verify the fully closed fail-safe position. The valve plug feedback proximity switches should be set for the fully opened and fully closed positions of the valve. See Figure 8 on page 12 for port and corresponding chambers.

Decommission the system, drain the lines and lock out the pumps.

1. With the valve fully closed, confirm that the proximity switches conform to Table 2. Verify the switch status on the PLC control system.
2. Pressurize chamber B to open the valve (Figure 8, page 12). Confirm that the proximity switches conform to Table 2. Verify the switch status on the PLC control system.
3. Vent chamber B to close the valve.
4. If used, activate the upper seat lift either through the control system or by supplying air to port C.
5. When the upper seat lifts, confirm that the proximity switches conform to the values in Table 2. If the yoke area does not have a limit switch, visually confirm the upper seat lifting.
6. Vent the air in chamber C to deactivate the seat lift.
7. If used, pressurize chamber A to activate the lower seat push.
8. Confirm that the proximity switches conform to Table 2. Verify the switch status on the PLC control system.
9. Vent the air in chamber A to deactivate the seat lift.
10. Disconnect the air from the valve actuator. placing the valve in the fail-safe position. Verify that the proximity switches register that the valve is fully closed.

Corrective Action

If the double seat Mix Proof valve fails to respond as indicated above, immediately check the valve assembly and wiring to locate and correct the cause:

- First, check the proximity switch adjustment.
- Check for the correct assembly and adjustment of the valve.
- For specific information on switch setting, please refer to control module publications 95-03077 (3-Piece) or 95-03083 (2-piece).

Valve Operating Conditions

See Figure 8 on page 12 for port and corresponding chambers.

Valve Open

The valve is open when Chamber B is pressurized and Chambers A and C are vented. See Figure 9.

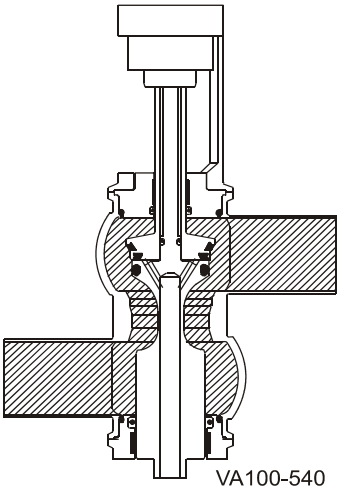


Figure 9 - Valve Open

Valve Closed

The valve is closed when Chambers A, B, and C are vented. The large spring closes the valve to the fail safe position. See Figure 10.

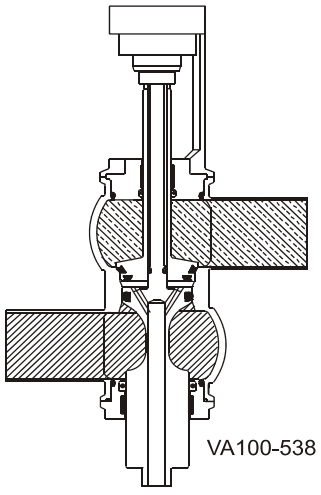


Figure 10 - Valve Closed

Valve Closed, Upper Seat Lifted

For cleaning the upper seat on seat lifting models only. Chamber C is pressurized, and Chambers A and B are vented. See Figure 11.

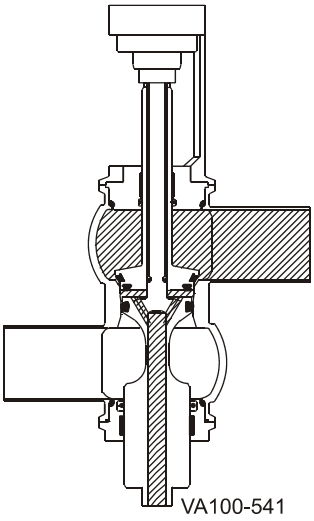


Figure 11 - Valve Closed Upper Seat Lifted

Valve Closed, Lower Seat Push (for W72RS Series Only)

Chamber A is pressurized, and Chambers B and C are vented. See Figure 12. For W72RS Series valves, the lower seat is pushed down for seat cleaning.

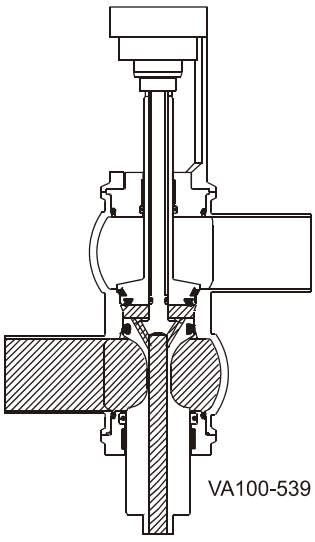


Figure 12 - Lower Seat Lowering for W72RS Series

Valve Closed, Lower Seat Lift (for W71/W73 Series valves only)

The lower seat is lifted for seat cleaning. See Figure 13.

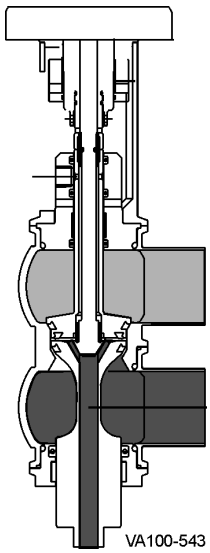


Figure 13 - Lower Seat Lift for W71/W73

Maintenance

Maintenance Intervals

Maintain adequate stock of replacement parts. See the items in bold beginning on page 26 for recommended spare parts.

Maintenance intervals should be determined by the user and specific application, based on the following conditions:

- Daily operation period
- Switching frequency
- Application parameters, such as temperature, pressure, and flow
- Product type
- CIP time and temperature

Use the following recommendation as a rough guide:

- For fluid temperatures ranging from 180°F to 212°F (82°C to 100°C): approx. every 3 to 6 months
- For fluid temperatures of 140°F: approx. every 12 months

The values listed above are only general guidelines and do not apply, for example, to fluids which crystallize on contact with air. The values listed are subject to the chemical resistance of the seal material.

Inspection

Inspect the following on a regular basis:

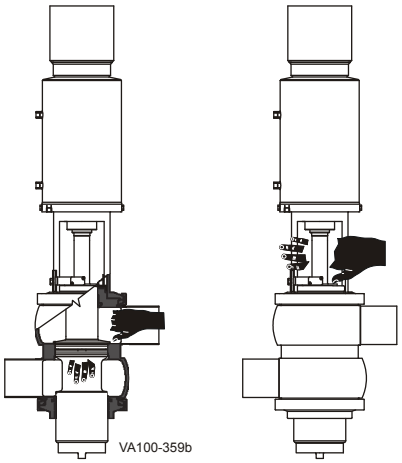
- Actuator connections for air leaks
- Valve body and stem o-rings
- Valve seats (If leakage occurs, see "Troubleshooting" on page 70.)
- Pneumatic connections:

  Air pressure at supply connection
  Air lines for kinks and leaks
  Threaded connections for tight fit
  Clean air filter at regular intervals

- Electrical connections secure on control module

  Wire connections tight on terminal strip
  Electrical connections to control module
  Threaded strain relief for tight fit.

DANGER: *Do not put a hand into the yoke or body of a pneumatically actuated valve.*



Lubrication

No lubrication is required other as than noted in the disassembly and assembly procedures. (Use food grade non-petroleum (silicone) grease on seals and o-rings.)

Apply Bostik Never-Seez® White Food Grade with PTFE or equivalent to all bolts and threaded stem parts.

Cleaning

CAUTION: *Avoid splashing any liquid into the air vent of the actuator during clean up.*

Cleaning-In-Place (CIP)

CIP methods can be used to clean installed automatic valves without disassembly. Select methods based on the specific requirements of sanitarians and each application. Check with local chemical suppliers for the most effective cleaning agents and procedures.

NOTE: *Actuate each valve or use either external flush or seat lifting to ensure effective cleaning and sanitizing. Expose all product-contact surfaces to the appropriate cleaning solutions.*

Mix Proof valves can be fitted with a 1/4 NPT flush connection for rinsing the area between the seats and the vent/drain port. The area can be flushed regularly in the event of long times between CIP cleanings. See "External Flush (Figure 4)" on page 9.

CAUTION: *During valve opening and CIP cleaning, fluid escapes from the drain port. Drain it off to prevent any possible hazard to personnel.*

Cleaning Procedure

Mix Proof valves are designed to use a cleaning solution supplied by a CIP system.

Establish cleaning procedures for each installation depending on product characteristics, operating parameters (temperature, velocity, valve cycles), and product velocities.

For seat lifting valves, the upper or lower seat lifting should occur when the upper or lower body is CIP. Seat lifting positions are factory-set and marked in the yoke area. Seat lifting will produce visible leakage from the vent outlet. Brief multiple lifts should occur for each step in the CIP program, excluding initial rinse. Seat lifting is not recommended during the initial rinse.

For the optional external flush of the vent cavity, water flush can be activated during the final rinse.

Every few months of operation, remove and inspect one valve in the system to ensure that complete cleaning is being achieved.

- Maximum Solution Temperature: 160°F (71°C)
- Cleaning time is dependent on the inlet pressure; the recommended cycle time is one to three seconds per cleaning cycle.

Seat Lifting Adjustment

Seat lifting models are factory set. A line on the stem in the yoke area provides a visual indication of the correct adjustment. If required, adjust the seat lift to factory settings or within the adjustment zone, using a pin or spanner wrench.

NOTE: *Always adjust the lower seat first.*

WARNING: *Do not adjust the seat lift collars with pliers, vice-grips or adjustable jaw pliers (channel locks).*

Lower seat

Operate the lower seat lift cycle. Observe the indicator stem movement at the top of the valve or at the balancer on the bottom of the valve.

Table 3: Proper Movement: Lower Seat

Valve	Setting
W71/W73	0.04" - 0.1" (0.060" Factory Setting)
W72RS/ W72	0.18" (1-1/2" and 2" Valves) 0.28" (2-1/2", 3" and 4" Valves)

To adjust the movement of the lower seat for cleaning, rotate the adjusting sleeve in the yoke (Figure 14, item B):

W71/W73: Rotate right to increase; left to decrease.

W72/W72RS: Rotate left to increase; right to decrease.

Upper seat

Operate the upper lift cycle once. Operate three more times to observe the outer stem movement by watching the adjusting nut in the yoke.

Table 4: Proper Movement: Upper Seat

Valve	Setting
W71 / W73	0.04" - 0.1" (.060" Factory Setting)
W72RS / W72	0.12"

To adjust the movement of the upper seat, rotate the adjusting nut (Figure 14, item A): left to increase; right to decrease.

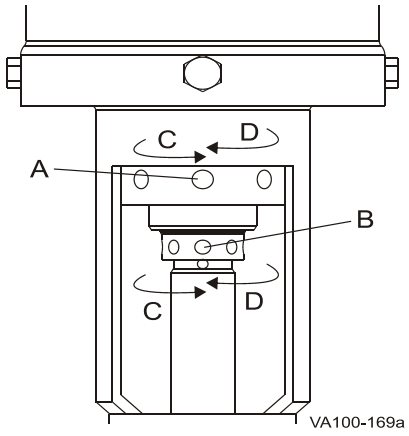


Figure 14 - Location of Adjusting Nut

A. Adjusting nut, upper seat	C. Rotate right
B. Adjusting nut, lower seat	D. Rotate left

This icon indicates a link to a maintenance video available online or in the CD version of this manual. To access the PDF online, go to: http://www.spxprocessequipment.com/sites/wcb/products/valves/PDF/95-03087_w70mixproofv_wcb.pdf, or for a CD version, contact your local distributor and ask for CD-1802.

Removing Valve from System

WARNING: *Before removing the actuator/valve stem assembly from the valve body, drain all product lines connected to the body.*

1. Clean, rinse, and drain the pipe system elements attached to the valve. Remove or block the fluid and gas lines to prevent material from entering the pipe system elements attached to the valve. If present, disconnect the flush water supply connection. If supplied, seat lifts can be used to check for pressurization.
2. Disconnect the external flush if used.
3. Disconnect the electrical supply and lock out all power.

NOTE: *If the valve has a control module with a solenoid, the air and electric must remain ON until the valve is properly disassembled.*

4. Supply air to the open valve.
5. Remove the clamp between the yoke and the adapter (Figure 15, item A).

Maintenance Video 1: Remove valve from body

6. Remove the air pressure to cycle the valve closed, lifting the valve approximately 3/8" (9.5 mm) out of the body. Shut off and disconnect the air supply.
7. Disconnect and lock out electrical power to the valve.
8. Lift the complete valve actuator and stems out of the valve body, being careful not to damage the stems or internals.
9. Move the valve to a work station.
10. Re-install in reverse order

Maintenance Video 2: Re-install valve into body

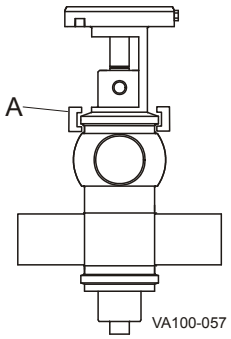


Figure 15 - Location of Adapter Clamp

Disassembly of Valve Stems

Disassembly of the valve stems is required for seat ring replacement.

NOTE: *Seals, seal grooves, and contact surfaces are precision parts and must not be damaged.*

1. Lower stem removal: Using an open end wrench, remove the lower stem (Figure 16, item A) from the actuator by turning it counter-clockwise.

Maintenance Video 3: Remove lower stem

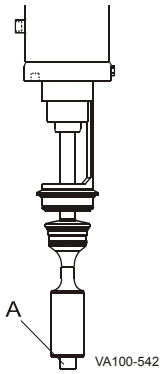


Figure 16 - Valve Stem Removal

NOTE: *(For seat lifting valves) Before disassembly, note the position of the upper and lower seat lifting adjustment nuts. See Figure 14.*

Maintenance Video 4: Lower stem reassembly into valve

2. To remove the upper stem (Figure 17, item B), hold the adjusting sleeve stationary with a spanner wrench, turn the stem counter-clockwise, and remove it from the actuator. If the adapter (Figure 17, item C) comes out of the yoke, handle it with care.

Maintenance Video 5: Remove upper stem

Maintenance Video 6: Upper stem reassembly into valve

NOTE: *Do not pressurize the actuator with the stems removed, as internal o-ring damage will result.*

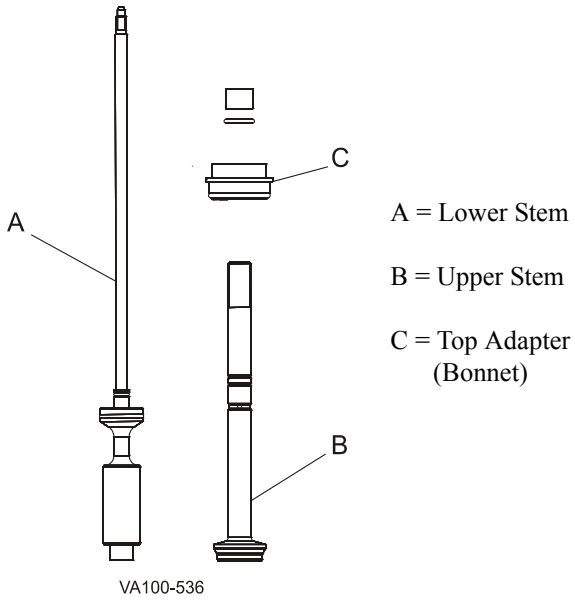


Figure 17 - Stem Removal

Adapter Bearings and O-rings

Inner O-ring and Bearing Replacement

1. Remove the valve stem assembly from the actuator and slide the adapter off the outer stem.
2. Remove and replace the o-ring (Figure 18, item A) inside the adapter. For the flush/steam barrier adapters, see Figure 4 on page 9 and Figure 6 on page 10, respectively.

Maintenance Video 7: Adapter o-rings and bearing removal and replacement

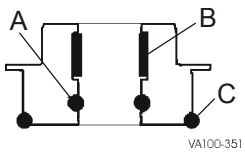


Figure 18 - Standard Top Adapter

3. Check the split bearing (Figure 18, item B) inside the adapter by feeling the amount protruding from the adapter wall. If the bearing is flush with the wall, replace the bearing.
4. Place a screwdriver behind the bearing and pry it away from the wall of the adapter. A needle-nose pliers can be used to grip the bearing for removal. Be careful not to scratch or damage the metal surfaces.

NOTE: *The bearing will be damaged during removal and must be replaced with a new bearing.*

5. To install a new bearing, coil the bearing to a size smaller than the inside diameter of the adapter and insert it into the proper location.
6. Using your finger, ensure that the bearing is properly seated. Visually inspect the seating.
7. If necessary, push the actuator stem into the adapter to help properly seat the bearing.

Outer O-ring Replacement

1. Remove the valve stem assembly from the actuator and slide the adapter off the outer stem.
2. Slide or cut the outer o-ring (Figure 18, item C) off the adapter. Do not nick or scratch the o-ring groove.
3. Lubricate the new o-ring with grease and install it.

Tri Ring Seat Replacement

1. Remove the Tri Ring seat by carefully cutting or using an o-ring tool to pull the seat out of the groove. Do not scratch or nick the metal seating surface.

Maintenance Video 8: Upper stem Tri Ring removal

2. Clean the Tri Ring groove after removing the seat.

3. Lubricate the new Tri Ring (Figure 19, item A) with acceptable cleansing solution or lubricant.

4. Place the stem through a 1-1/8 inch (30 mm) hole bored through a board, secured by a vise.

5. Start the Tri Ring as shown in Figure 19.

Maintenance Video 9: Upper stem Tri Ring replacement

6. Using the installation tool, part number 102797 (Figure 19, item B), press the Tri Ring into the plug at locations A, B, C, and D (Figure 20). If the tool is not used, DO NOT use a knife or any other sharp item that will tear or cut the Tri Ring.

7. To finish installation, press small sections of the seal, alternating from side to side (A-B-C-D), avoiding large loops of seal.

8. When properly installed, the Tri Ring seat lip will protrude slightly from the seat edge as shown in Figure 19.

Maintenance Video 10: Lower stem o-ring and Tri Ring replacement (W71/W73)

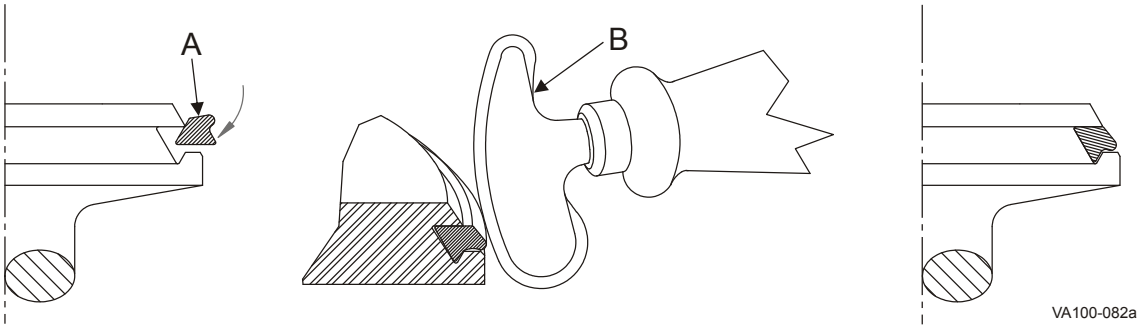


Figure 19 - Installing New Tri Ring Seat

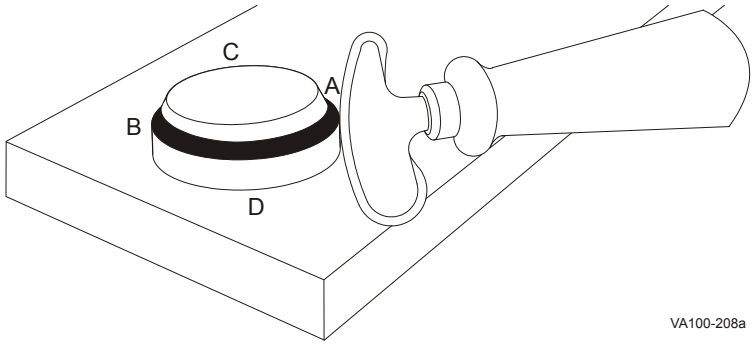


Figure 20 - Pressing Tri Ring Into Plug

Radial Seat Ring Replacement (for W72RS Lower Stem)

1. Remove the lower stem radial seal by carefully prying up and cutting the o-ring. Pry up the o-ring and pull it out to remove it. Do not scratch or nick the metal seating surface.

Maintenance Video 11: Radial Seal Removal

2. Clean the radial seal groove after removal.

3. Ensure that the vent port in the back of the groove is clean and unblocked.

4. Lubricate the o-ring seal and expand it over the stem groove.

5. Place the assembly tool over the stem and extrude the o-ring seal into the groove by evenly tightening the cap screws on the installation tool.

6. Remove the tool. The dovetail groove permanently retains the o-ring seal.

Maintenance Video 12: Radial Seat Ring Replacement

For a list of installation tools, see “Installation Tools” on page 59.

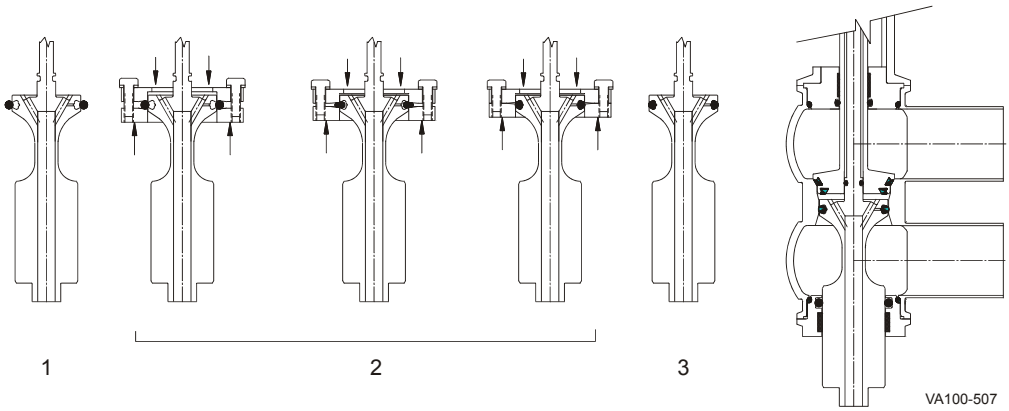


Figure 21 - Radial Seal Installation

Lower Bearing Carrier O-ring and Bearing Replacement

1. Remove and replace the o-ring (Figure 22, item A) located inside the lower bearing carrier. For the flush/steam barrier adapter, see Figure 4 on page 9.

Maintenance Video 13: Lower bearing carrier; removal and replacement of o-ring and bearings

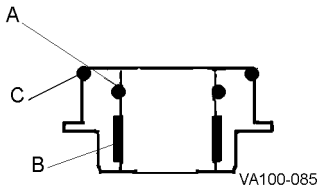


Figure 22 - Standard Lower Bearing Carrier

2. Check the split bearing (Figure 22, item B) inside the lower bearing carrier by feeling the amount protruding from the lower bearing carrier wall. If the bearing is flush with the wall, replace the bearing.

3. Place a screwdriver behind the bearing and pry it away from the wall of the lower bearing carrier. A needle-nose pliers can be used to grip the bearing for removal.

NOTE: *The bearing will be damaged during removal and must be replaced with a new bearing.*

4. To install the new bearing, coil the bearing to a size smaller than the inside diameter of the lower bearing carrier and insert it into the proper location.

5. Push the actuator stem into the lower bearing carrier to help seat the bearing properly.

6. Using your finger, ensure that the bearing is properly seated. Visually inspect the seating.

7. To remove the outer o-ring (Figure 22, item C), slide or cut the o-ring off the lower bearing carrier. Do not nick or scratch the o-ring groove.

8. Lubricate the new o-ring with grease and install it.

Actuator O-ring and Bearing Replacement

CAUTION: *The valve stems and actuator must be removed from the valve body before servicing the actuator components.*

NOTE: *Do not pressurize the actuator with air when the stems are removed.*

Removal of O-rings and Bearings

NOTE: *If present, the control module must be removed to replace the o-rings and bearings in the top of the cylinder assembly. Please refer to control module publications 95-03077 (3-Piece) or 95-03083 (2-piece).*

Non Seat Lifting Actuators

1. For non-seat lifting valves, remove the cap screws (Figure 23, item 9) and remove the yoke (item 12) from the cylinder assembly. Set the yoke aside.

Maintenance Video 14: Actuator disassembly; lower cartridge removal

2. Pull the piston and spring assembly (Figure 23, item 10) from the cylinder assembly.

3. Inspect the four o-rings (Figure 23). Replace them if they are worn or damaged.

Maintenance Video 17: Main piston o-ring removal

Maintenance Video 18: Main piston o-ring replacement with bearing

4. Inspect the three bearings (Figure 23). If the bearing does not extend slightly above the edge of the metal surface, replace the bearing.

5. The bearing is split to allow its removal from the groove. Place a screwdriver behind the bearing and pry it away from the wall of the yoke. A needle-nose pliers can be used to grip the bearing for removal.

NOTE: *The bearing will be damaged during removal and must be replaced with a new bearing.*

6. For non-seat lifting valves, assemble the stack components as shown in Figure 23. Install the yoke and cap screws.

NOTE: *Installation of the piston and spring assembly on 4" actuators requires a special sleeve to contain the bearing on the piston while installing the assembly. See Figure 25 and Figure 26 on page 25.*

Maintenance Video 22: Using insertion sleeve for W71/W73 Actuators

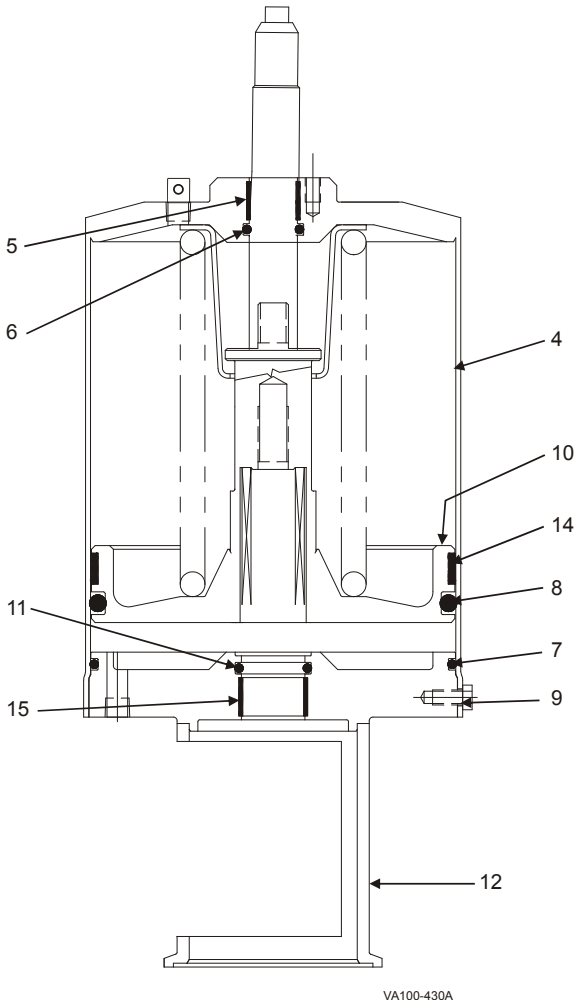


Figure 23 - Actuator Assembly (Non-Seat Lift Valve)

5. Bearing	10. Piston and Spring Assembly
6. O-ring	11. O-ring
7. O-ring	12. Yoke
8. O-ring	14. Bearing
9. Cap Screw	15. Actuator Stem Bearing

Seat Lifting Actuators

1. For seat lifting valves, remove the cap screws (Figure 24, item 9) and remove the lower cartridge (yoke, item 12; adjusting nut, item 20; adjusting sleeve, item 24; and upper seat piston, 23).

Maintenance Video 14: Actuator disassembly; lower cartridge removal

2. To disassemble the cartridge, remove the adjusting nut (item 20) and separate the parts.

Maintenance Video 15: Adjusting Nut removal

3. Remove the small spring (Figure 24, item 18). On W71/ W73 valves, also remove the bushing (Figure 24, item 28).

4. Pull out the upper cartridge (main piston, item 22; lower seat spring and piston, item 10), by carefully threading in the lower stem to pull it. Do not bend the lower stem.

Maintenance Video 17: Main piston o-ring removal

Maintenance Video 18: Main piston o-ring replacement with bearing

Maintenance Video 19: Can top bearing and o-ring; removal and replacement

5. Inspect the nine o-rings (Figure 24) and replace them if they are worn or damaged.

6. Inspect the five bearings on W71/W73 actuators or four bearings on W72RS actuators (Figure 24). If the bearing does not extend slightly above the edge of the metal surface, replace it.

Maintenance Video 20: Main piston bearing

7. The bearing is split to allow its removal from the groove. Place a screwdriver behind the bearing and pry it away from the wall of the yoke. A needle-nose pliers can be used to grip the bearing for removal.

NOTE: *The bearing will be damaged during removal and must be replaced with a new bearing.*

8. For seat lifting valves, assemble the stack components as shown. Make sure that the upper cartridge components are fully inserted. Install the yoke and adjustment nut.

Maintenance Video 21: Lower seat lift piston reassembly

Maintenance Video 23: Reassembly of actuator: spacers and inner spring

Maintenance Video 24: Reassembly of lower cartridge o-rings and bearings

Maintenance Video 25: Re-installation of lower cartridge

NOTE: *Installation of the piston and spring assembly on 4" actuators requires a special sleeve to contain the bearing on the piston while installing the assembly. See Figure 25 and Figure 26 on page 25.*

Maintenance Video 22: Using insertion sleeve for W71/W73 Actuators

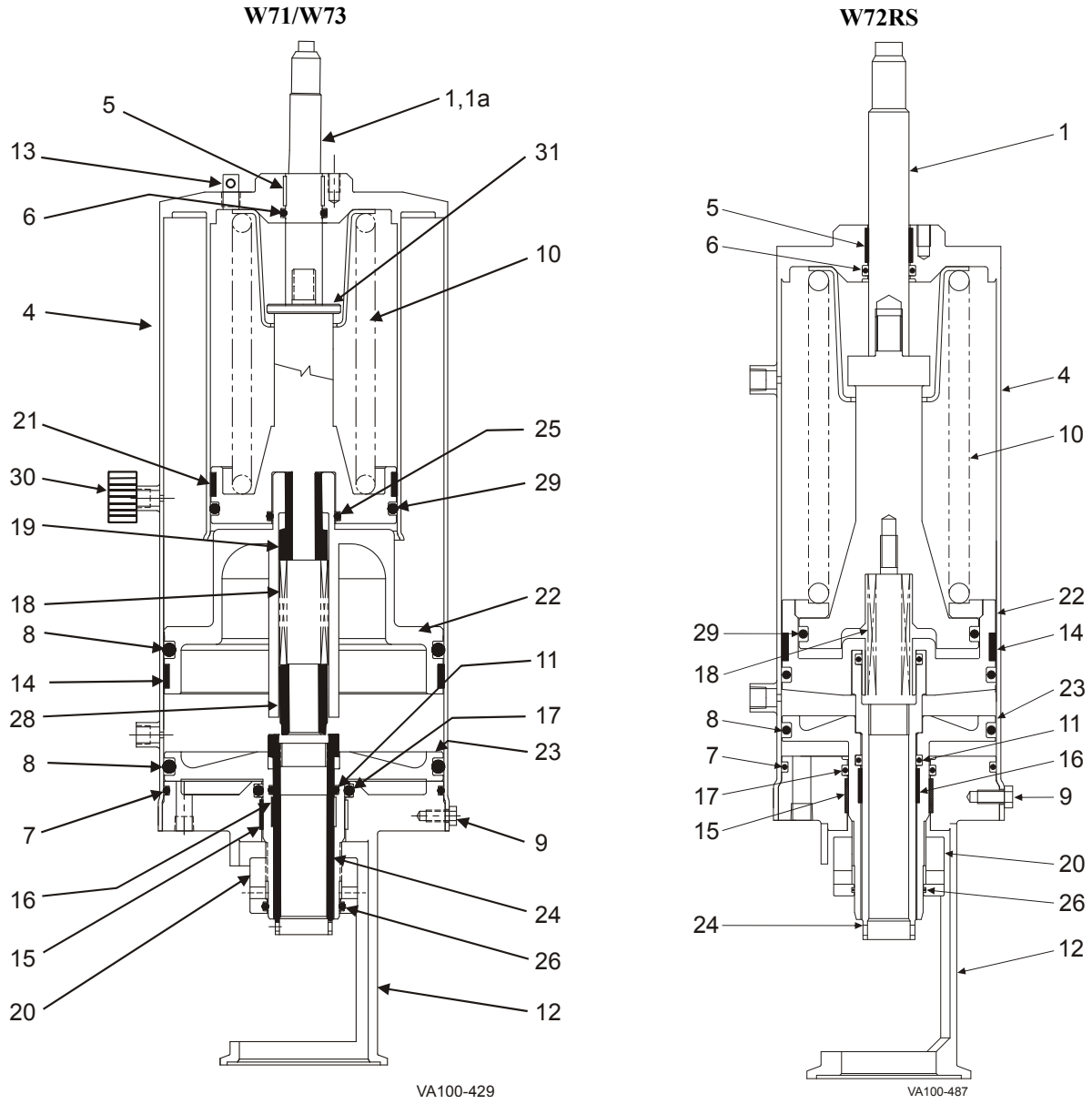


Figure 24 - Actuator Assembly (Seat Lift Valve)

1. Indicator Stem-Visual	10. Piston and Spring Assembly	18 Spring, Upper Stem
1a. Indicator Stem-Control Top	11. O-ring	20. Nut, Upper Seat Clean
4. Cylinder	12. Yoke	22. Main Piston
5. Bearing, Cylinder	13. Vent Plug	23. Upper Seat Piston
6. O-ring	14. Bearing, Main Piston	24 Adjusting Sleeve
7. O-ring, Cylinder	15. Bearing, Lifting Piston	26. O-ring
8. O-ring, Piston	16. Bearing	29. O-ring, Lower Seat Piston
9. Cap Screw	17. O-ring	31. Washer (1.5" valve only)

Installation of Piston and Spring Assembly Using Insertion Sleeve for W71/W73 Actuators

The installation of the piston and spring assembly in the cylinder requires a special sleeve to contain the bearing on the piston during installation. See Figure 25 and Figure 26. See Figure 28 on page 59 for part number and dimensional details.

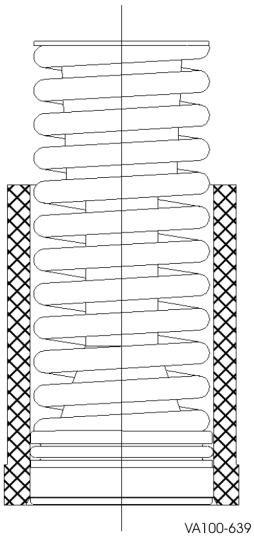


Figure 25 - Piston and Spring Assembly Installed in Insertion Sleeve

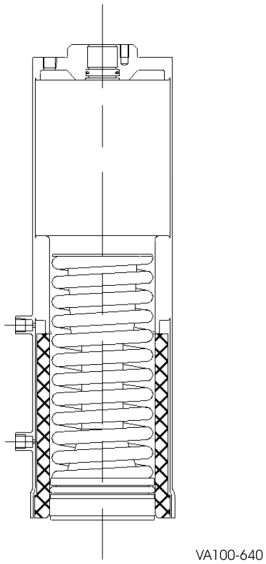


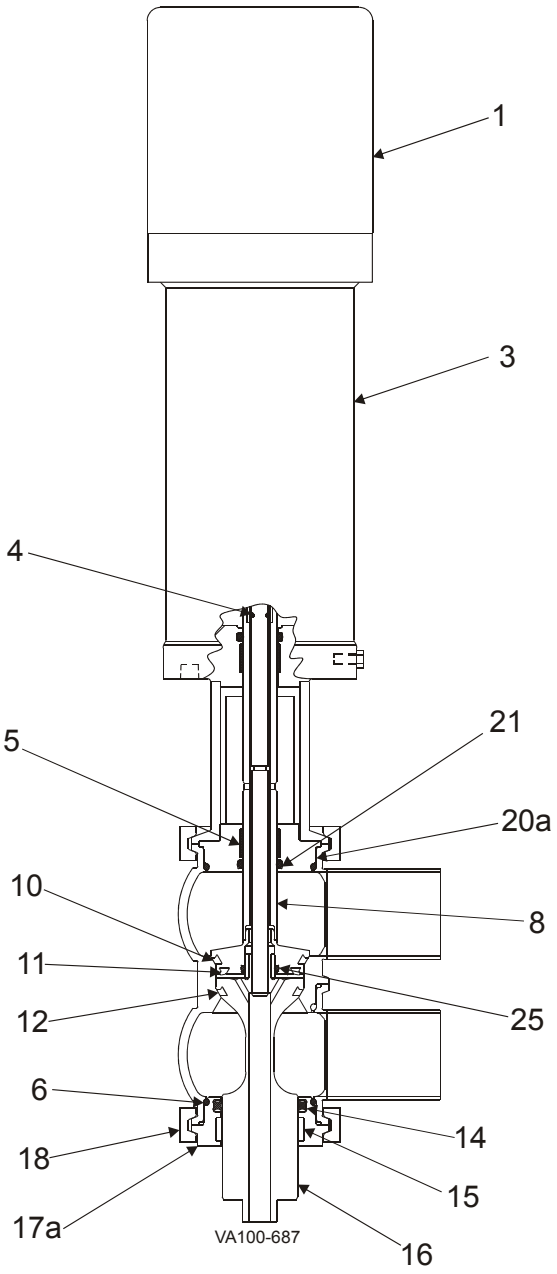
Figure 26 - Installation of Piston and Spring Assembly Using Insertion Sleeve

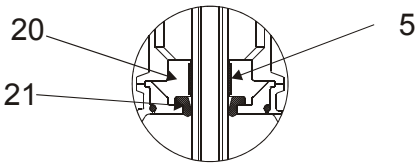
- Push the insertion sleeve up into the cylinder assembly.
- When the sleeve is stopped, push the piston and spring assembly up into the cylinder assembly.

Maintenance Video 22: Using insertion sleeve for W71/W73 Actuators

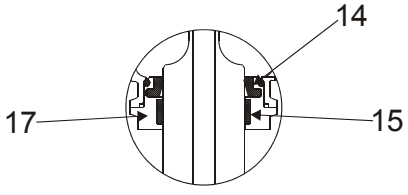
Parts Lists

W71 Mix Proof Non-Seat Lift Valve





(20b)



(17b)

W71 Mix Proof Non-Seat Lift Valve

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	**4**	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
*	**5**	**Bearing**		102757	102757	106047	106047	106047
*	**6**	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper - see note 1, below						
*	**10**	**Seat Ring -Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	**11**	**Seat Ring -Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	**12**	**Seat Ring -Tri Ring, Lower**	**EPDM**	106036	107693	102487	102489	102492
			FKM	107991	107984	107973	107975	107978
*	**14**	**O-ring, Lower Stem**	**EPDM**	E70322	E70327	E70331	E70335	E70342
			FKM	V70322	V70327	V70331	V70335	V70342
		Quad Ring, Lower	**EPDM**	122689	35413	34429	117561	116952
			FKM	122690	35414	35415	117562	116953
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116190	116195	116199
			FKM	116187	116189	116191	116196	116200
*	**15**	**Bearing**		101947	102000	106049	106048	102003
	16	Stem, Lower Assembly - see note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	20a	Adapter, O-ring or Quad Ring		111043	111017	111196	111026	111029
	20b	Adapter, Wiping Stem Seal		117840	117841	117842	117843	117878
	21	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
*			**FKM**	V70210	V70210	V70214	V70214	V70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
		Wiping Stem Seal, Upper	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
	25	**O-ring**	**EPDM**	E70115	E70115	E70121	E70121	E70121
*			**FKM**	V70115	V70115	V70121	V70121	V70121

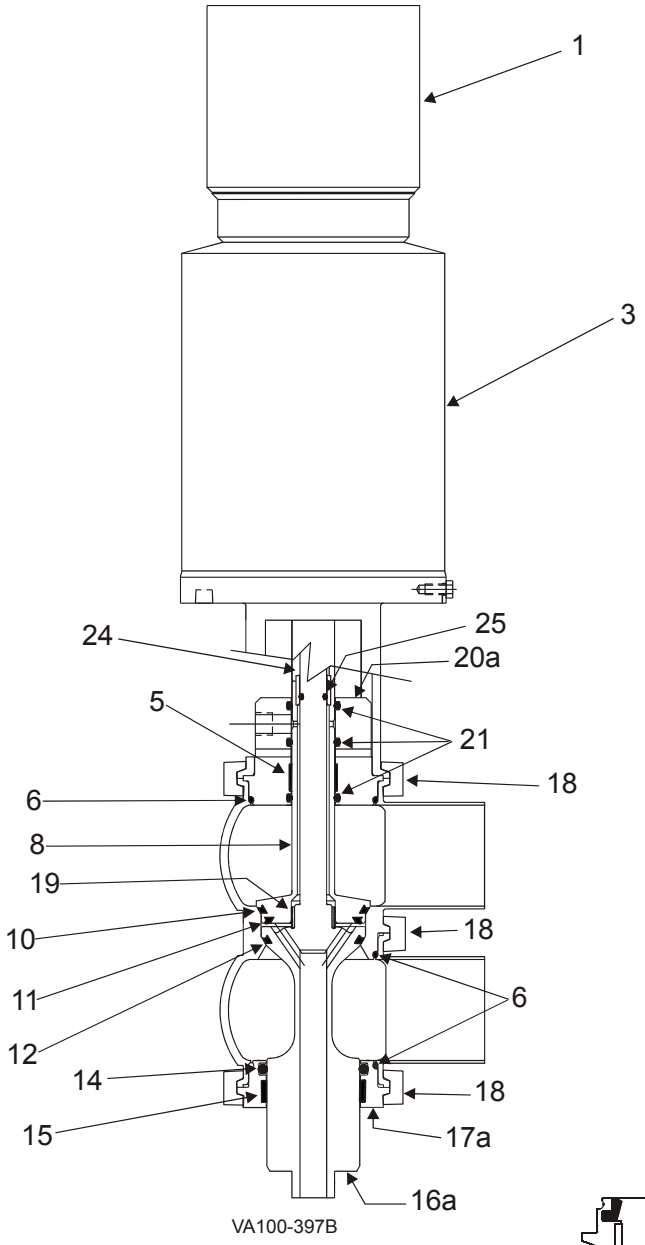
Notes: PL5027-CH47

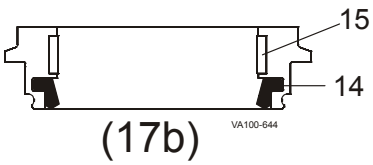
* Recommended Spare Parts

*** See actuator parts lists

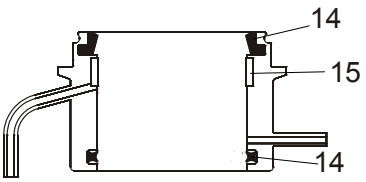
1. For items 8 and 16, see W71 Mix Proof Non-Seat Lift Valve Stems Chart.

W71 Mix Proof Non-Seat Lift Valve with External Flush

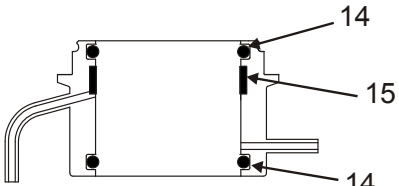




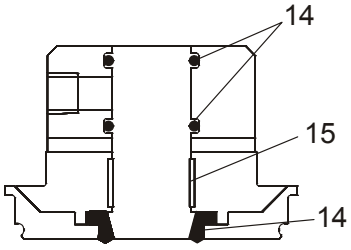
(17b)



(17d)



(17c)



(20b)

W71 Mix Proof Non-Seat Lift Valve with External Flush

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	**4**	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
	5	Bearing		102757	102757	106047	106047	106047
*	**6**	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	**10**	**Seat Ring -Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	**11**	**Seat Ring -Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	**12**	**Seat Ring -Tri Ring, Lower**	**EPDM**	106036	107693	102487	102489	102492
			FKM	107991	107984	107973	107975	107978
*	**14**	**O-ring, Lower Stem**	**EPDM**	E70322	E70327	E70331	E70335	E70342
			FKM	V70322	V70327	V70331	V70335	V70342
		Quad Ring, Lower	**EPDM**	122689	35413	34429	117561	116952
			FKM	122690	35414	35415	117562	116953
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116190	116195	116199
			FKM	116187	116189	116191	116196	116200
	15	Bearing		101947	102000	106049	106048	102003
	16a	Stem, Lower Assembly - See note 1, below						
	16b	Stem, Lower Flush - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	17c	Seal Retainer, Lower Flush, O-Ring or Quad Ring		114918	117728	114920	117736	118364
	17d	Seal Retainer, Lower Flush, Wiping Stem Seal		119050	119035	118226	117559	118253
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	19	Spray Bushing		106030	106030	107950	107950	107950
	20a	Adapter, O-ring or Quad Ring		106020	106021	106022	106023	106024
	20b	Adapter, Wiping Stem Seal		119467	119468	119569	119470	119471
*	**21**	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
			FKM	V70210	V70210	V70214	V70214	V70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
		Wiping Stem Seal, Upper	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
	24	Stem, Actuator		107790	107756	107949	107949	107949
*	**25**	**O-ring**	**EPDM**	E70010	E70010	E70111	E70111	E70111
			FKM	V70010	V70010	V70111	V70111	V70111

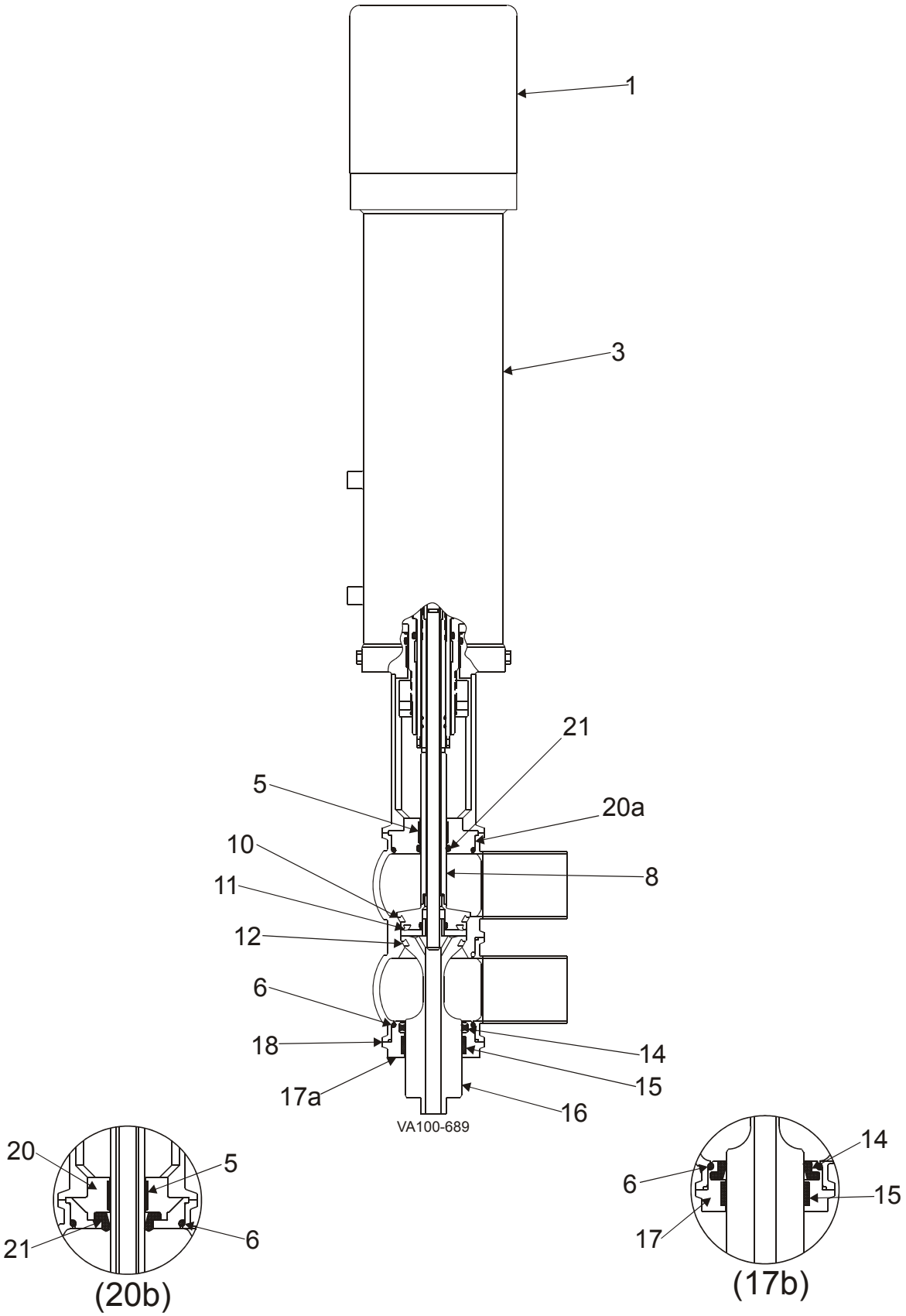
Notes: PL5027-CH48

* Recommended Spare Parts

*** See actuator parts lists

1. For items 8 and 16, see W71 Mix Proof Non-Seat Lift with External Flush Valve Stems Chart.

W71 Mix Proof Seat Lift Valve



W71 Mix Proof Seat Lift Valve

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	4	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
*	5	**Bearing**		102757	102757	106047	106047	106047
*	6	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper - See note 1, below						
*	10	**Seat Ring -Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	11	**Seat Ring -Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	12	**Seat Ring -Tri Ring, Lower**	**EPDM**	106036	107693	102487	102489	102492
			FKM	107991	107984	107973	107975	107978
*	14	**O-ring, Lower Stem**	**EPDM**	E70322	E70327	E70331	E70335	E70342
			FKM	V70322	V70327	V70331	V70335	V70342
		Quad Ring, Lower	**EPDM**	122689	35413	34429	117561	116952
			FKM	122690	35414	35415	117562	116953
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116190	116195	116199
			FKM	116187	116189	116191	116196	116200
	15	Bearing		101947	102000	106049	106048	102003
	16	Stem, Lower Assembly - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	20a	Adapter, O-ring or Quad Ring		111043	111017	111196	111026	111029
	20b	Adapter, Wiping Stem Seal		117840	117841	117842	117843	117878
*	21	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
			FKM	V70210	V70210	V70214	V70214	V70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
		Wiping Stem Seal, Upper	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
*	25	**O-ring**	**EPDM**	E70115	E70115	E70121	E70121	E70121
			FKM	V70115	V70115	V70121	V70121	V70121
*	26	**O-ring**	**Nitrile**	N80016	N80016	N80020	N80020	N80020

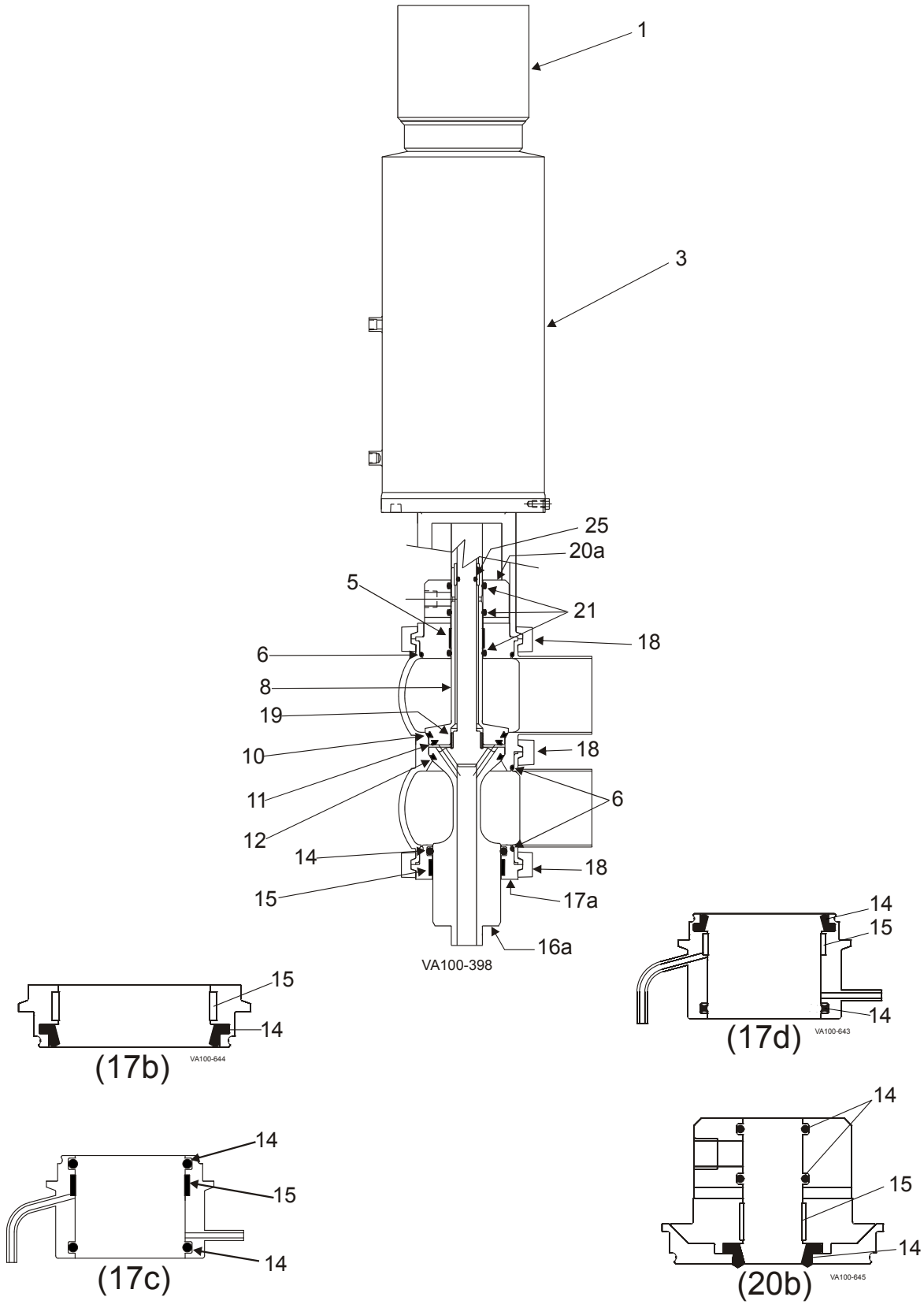
Notes: PL5027-CH49

* Recommended Spare Parts

*** See actuator parts lists

1. For items 8 and 16, see W71 Mix Proof Seat Lift Valve Stems Chart.

W71 Mix Proof Seat Lift Valve with External Flush



W71 Mix Proof Seat Lift Valve with External Flush

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	4	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
*	5	**Bearing**		102757	102757	106047	106047	106047
*	6	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	10	**Seat Ring -Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	11	**Seat Ring -Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	12	**Seat Ring -Tri Ring, Lower**	**EPDM**	106036	107693	102487	102489	102492
			FKM	107991	107984	107973	107975	107978
*	14	**O-ring, Lower Stem**	**EPDM**	E70322	E70327	E70331	E70335	E70342
			FKM	V70322	V70327	V70331	V70335	V70342
		Quad Ring, Lower	**EPDM**	122690	35413	34429	117561	116952
			FKM	122689	35414	35415	117562	116953
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116198	116195	116199
			FKM	116187	116189	116191	116196	116200
*	15	**Bearing**		101947	102000	106049	106048	102003
	16a	Stem, Lower Assembly - See note 1, below						
	16b	Stem, Lower Flush - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	17c	Seal Retainer, Lower Flush, O-Ring or Quad Ring		121374	117728	122609	117736	118364
	17d	Seal Retainer, Lower Flush, Wiping Stem Seal		119050	119035	118226	117559	118253
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	19	Spray Bushing		106030	106030	107950	107950	107950
	20a	Adapter (External Flush), O-ring or Quad Ring		106020	106021	106022	106023	106024
	20b	Adapter, Wiping Stem Seal		119467	119468	119469	119470	119471
*	21	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
			FKM	V70210	V70210	V70214	V70214	V70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
		Wiping Stem Seal, Upper	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
*	25	**O-ring**	**EPDM**	E70010	E70010	E70111	E70111	E70111
			FKM	V70010	V70010	V70111	V70111	V70111
*	26	**O-ring**	**Nitrile**	N80016	N80016	N80020	N80020	N80020

Notes:

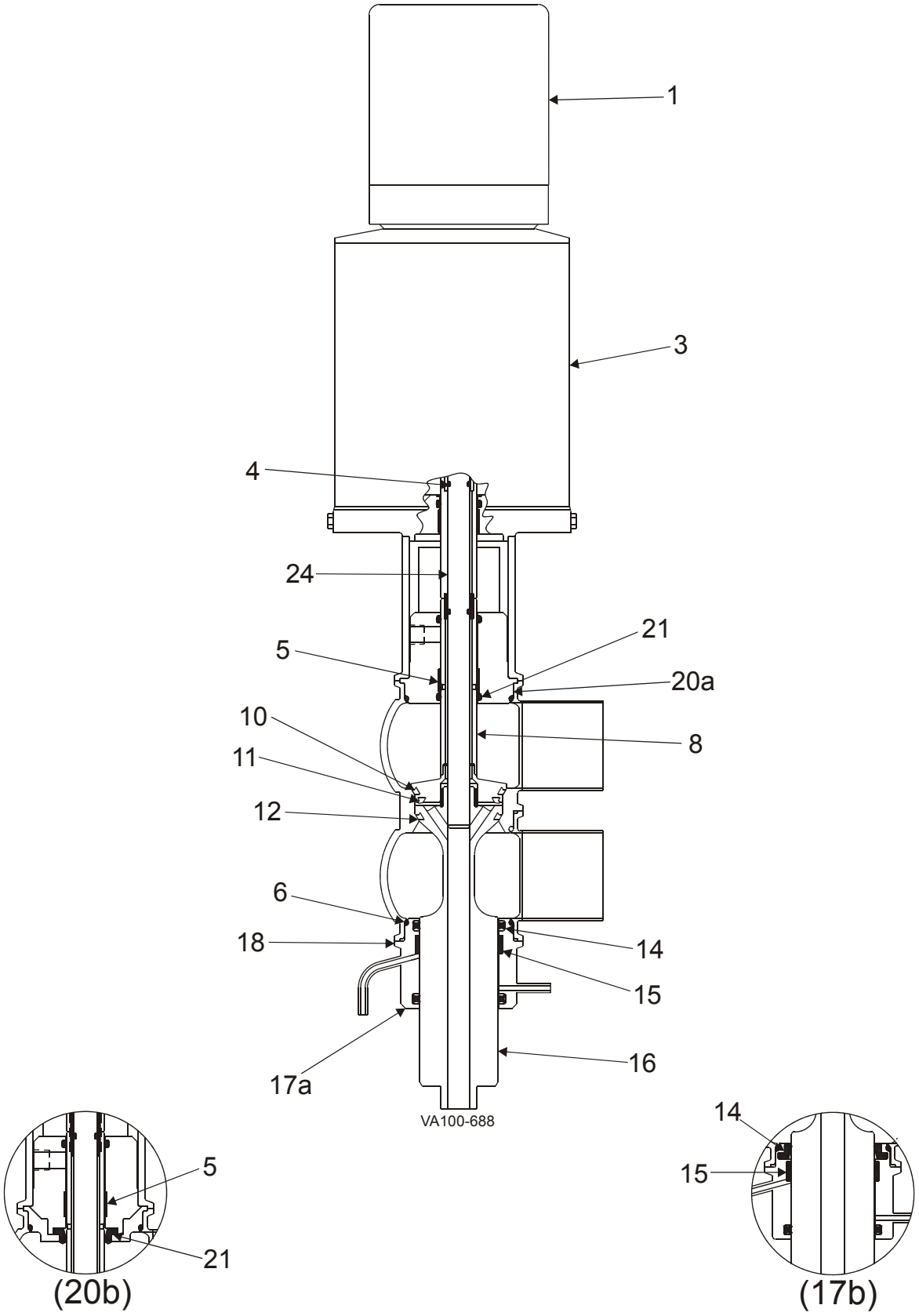
PL5027-CH50

* Recommended Spare Parts

*** See actuator parts lists

1. For items 8 and 16, see W71 Mix Proof Seat Lift with External Flush Valve Stems Chart.

W71 Mix Proof Non-Seat Lift Valve with Steam Adapter



W71 Mix Proof Non-Seat Lift Valve with Steam Adapter

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	**4**	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
	5	Bearing		102757	102757	106047	106047	106047
*	**6**	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	**10**	**Seat Ring -Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	**11**	**Seat Ring -Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	**12**	**Seat Ring -Tri Ring, Lower**	**EPDM**	106036	107693	102487	102489	102492
			FKM	107991	107984	107973	107975	107978
*		**O-ring, Lower Stem**	**EPDM**	E70322	E70327	E70331	E70335	E70342
	14	**Quad Ring, Lower**	**EPDM**	122690	35413	344429	117561	116952
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116198	116195	116199
	15	Bearing		101947	102000	106049	106048	102003
	16	Stem, Lower Assembly - See note 1, below						
	17a	Seal Retainer, Lower Flush, O-Ring or Quad Ring		POA	117728	122609	117736	118364
	17b	Seal Retainer, Lower Flush, Wiping Stem Seal		119050	119035	118226	117559	118253
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	19	Spray Bushing		106030	106030	107950	107950	107950
	20a	Adapter, O-ring or Quad Ring		POA	117741	114925	117742	114927
	20b	Adapter, Wiping Stem Seal		119482	119483	119484	119485	119486
*		**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
	21	**Quad Ring, Upper**	**EPDM**	121300	121300	124163	124163	124163
		Wiping Stem Seal, Upper	**EPDM**	116183	116183	116184	116184	116184
	24	Stem, Actuator		107790	107756	107949	107949	107949
*	**25**	**O-ring**	**EPDM**	E70010	E70010	E70111	E70111	E70111
			FKM	V70010	V70010	V70111	V70111	V70111

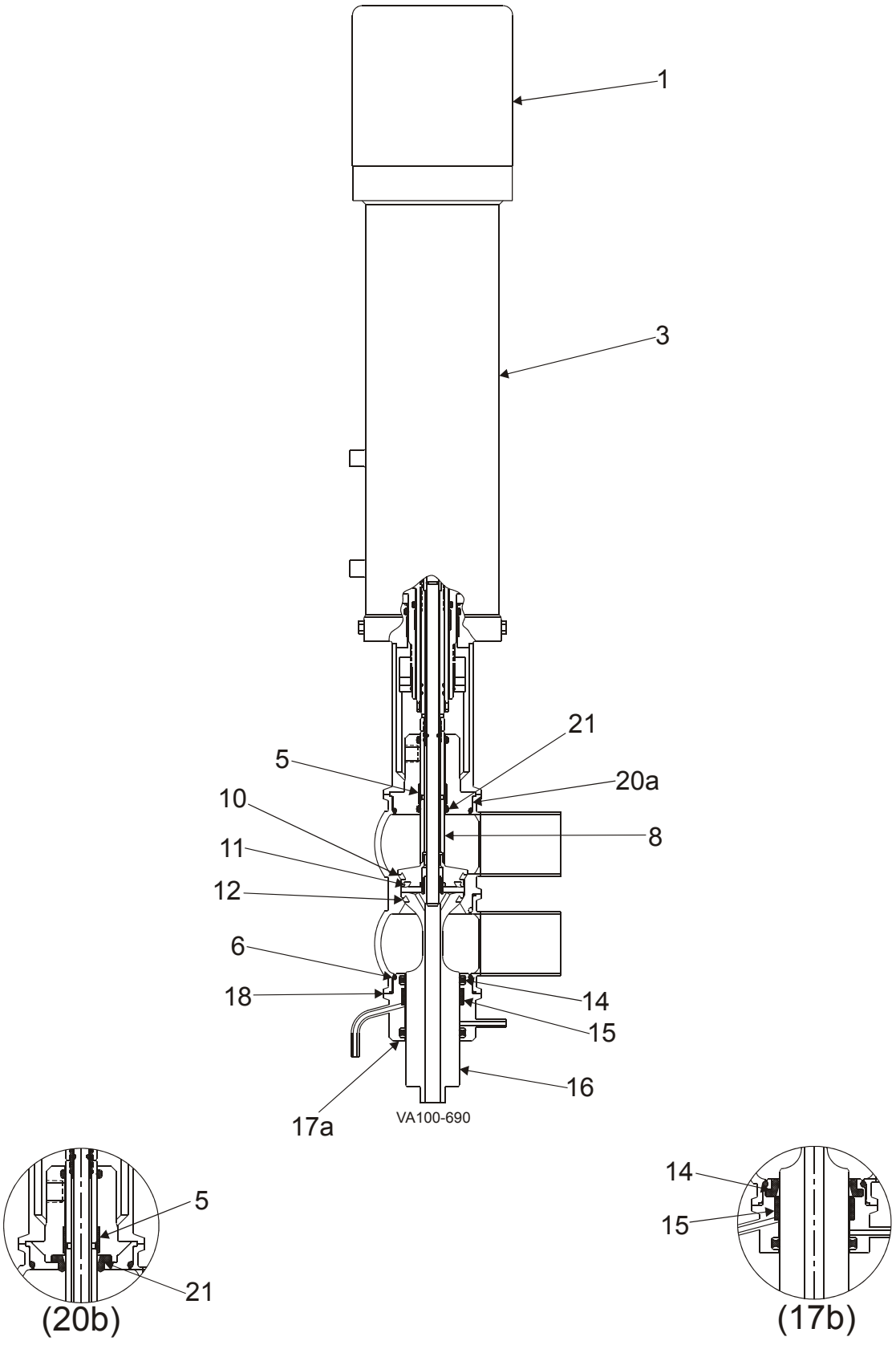
Notes: PL5027-CH86

* Recommended Spare Parts

*** See actuator parts lists

1. For items 8 and 16, see W71 Mix Proof Non-Seat Lift with Steam Adapter Valve Stems Chart.
   EPDM recommended on all steam-contact seals. For FKM use "V" in front of the part number instead of "E."

W71 Mix Proof Seat Lift Valve with Steam Adapter



W71 Mix Proof Seat Lift Valve with Steam Adapter

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	**4**	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
*	**5**	**Bearing**		102757	102757	106047	106047	106047
*	**6**	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	**10**	**Seat Ring -Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	**11**	**Seat Ring -Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	**12**	**Seat Ring -Tri Ring, Lower**	**EPDM**	106036	107693	102487	102489	102492
			FKM	107991	107984	107973	107975	107978
*		**O-ring, Lower Stem**	**EPDM**	E70322	E70327	E70331	E70335	E70342
	14	**Quad Ring, Lower**	**EPDM**	122690	35413	34429	117561	116952
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116198	116195	116199
*	**15**	**Bearing**		101947	102000	106049	106048	102003
	16	Stem, Lower Assembly - See note 1, below						
	17a	Seal Retainer, Lower Flush, O-Ring or Quad Ring		POA	117728	122609	117736	118364
	17b	Seal Retainer, Lower Flush, Wiping Stem Seal		119050	119035	118226	117559	118253
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	19	Spray Bushing		106030	106030	107950	107950	107950
	20a	Adapter, O-ring or Quad Ring		POA	117741	114925	117742	114927
	20b	Adapter, Wiping Stem Seal		119482	119483	119484	119485	119486
*		**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
	21	**Quad Ring, Upper**	**EPDM**	121300	121300	124163	124163	124163
		Wiping Stem Seal, Upper	**EPDM**	116183	116183	116184	116184	116184
*	**25**	**O-ring**	**EPDM**	E70010	E70010	E70111	E70111	E70111
			FKM	V70010	V70010	V70111	V70111	V70111
*	**26**	**O-ring**	**Nitrile**	N80016	N80016	N80020	N80020	N80020

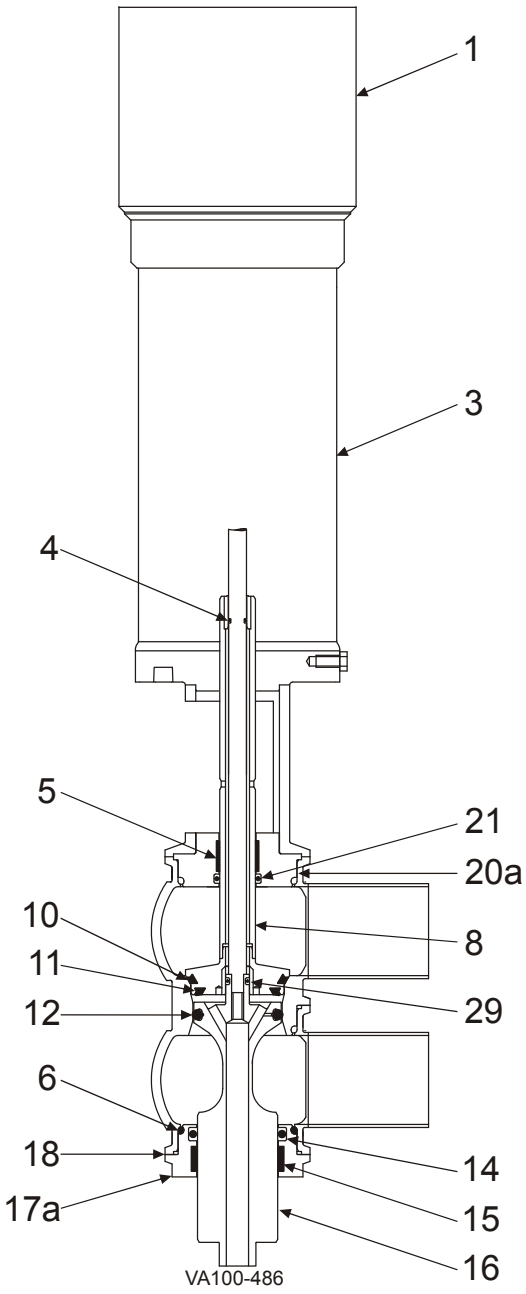
Notes: PL5027-CH87

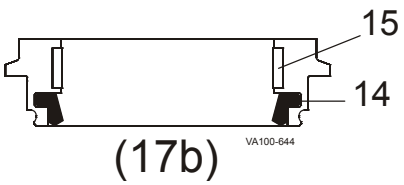
* Recommended Spare Parts

*** See actuator parts lists

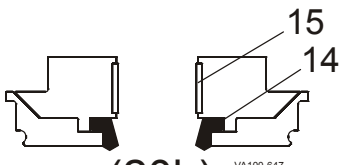
1. For items 8 and 16, see W71 Mix Proof Seat Lift with Steam Adapter Valve Stems Chart.
   EPDM recommended on all steam-contact seals. For FKM use "V" in front of the part number instead of "E."

W72RS Mix Proof Non-Seat Lift Valve





(17b)



(20b)

W72RS Mix Proof Non-Seat Lift Valve

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	**4**	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
	5	Bearing		102757	102757	106047	106047	106047
*	**6**	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper - See note 1, below						
*	**10**	**Seat Ring - Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	**11**	**Seat Ring - Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	**12**	**Seat Ring - O-ring, Lower**	**EPDM**	E80319	E80325	E80329	E80333	E80340
			FKM	V80319	V80325	V80329	V80333	V80340
*		**O-ring, Lower Stem**	**EPDM**	E70322	E70327	E70331	E70335	E70342
			FKM	V70322	V70327	V70331	V70335	V70342
	14	**Quad Ring, Lower**	**EPDM**	N/A	N/A	117992	117561	116952
			FKM	N/A	N/A	117993	117562	116953
*		**Wiping Stem Seal, Lower**	**EPDM**	116186	116188	116190	116195	116199
			FKM	116187	116189	116191	116196	116200
	15	Bearing		101947	102000	106049	106048	102003
	16	Stem, Lower Assembly - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	20a	Adapter		111043	111017	111196	111026	111029
	20b	Adapter, Wiping Stem Seal		119482	119483	119484	119485	119486
*		**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
			FKM	V70210	V70210	V70214	V70214	V70214
	21	**Quad Ring, Upper**	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
*		**Wiping Stem Seal, Upper**	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
*	**29**	**O-ring**	**EPDM**	E70109	E70109	E70113	E70113	E70113
			FKM	V70109	V70109	V70113	V70113	V70113

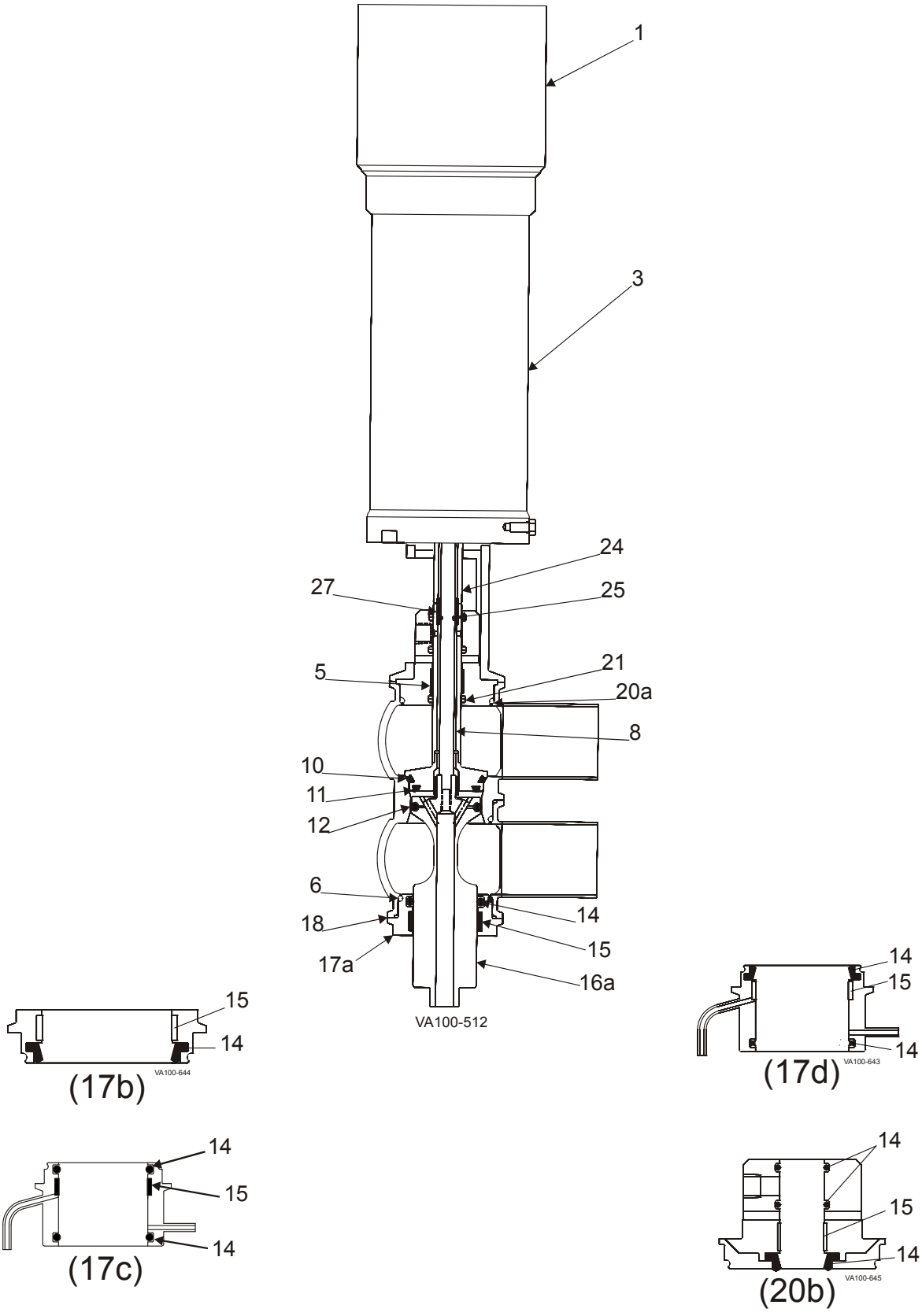
* Recommended Spare Parts

PL5027-CH51

*** See actuator parts lists

1. For items 8 and 16, see W72RS Mix Proof Non-Seat Lift Valve Stems Chart.

W72RS Mix Proof Non-Seat Lift Valve with External Flush



W72RS Mix Proof Non-Seat Lift Valve with External Flush

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	**4**	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
*	**5**	**Bearing**		102757	102757	106047	106047	106047
*	**6**	**O-ring, Body**		E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	**10**	**Seat Ring - Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	**11**	**Seat Ring - Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	**12**	**Seat Ring - O-ring, Lower**	**EPDM**	E80319	E80325	E80329	E80333	E80340
			FKM	V80319	V80325	V80329	V80333	V80340
	14	**O-ring, Lower**	**EPDM**	E70322	E70327	E70331	E70335	E70342
*			**FKM**	V70322	V70327	V70331	V70335	V70342
		Quad Ring, Lower	**EPDM**	122690	35413	34429	117561	116952
			FKM	122689	35414	35415	117562	116953
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116198	116195	116199
			FKM	116187	116189	116191	116196	116200
*	**15**	**Bearing**		101947	102000	106049	106048	102003
	16a	Stem, Lower Assembly - See note 1, below						
	16b	Stem, Lower Flush - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	17c	Seal Retainer, Lower Flush, O-Ring or Quad Ring		121374	117728	122609	117736	118364
	17d	Seal Retainer, Lower Flush, Wiping Stem Seal		119050	119035	118226	117559	118253
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	19	Spray Bushing		106030	106030	118210	118210	118210
	20a	Adapter		106020	106021	106022	106023	106024
	20b	Adapter, Wiping Stem Seal		119467	119468	119469	119470	119471
*	**21**	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
			FKM	E70210	V70210	V70214	V70214	V70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
*		**Wiping Stem Seal, Upper**	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
*	**25**	**O-ring**	**EPDM**	E70010	E70010	E70111	E70111	E70111
			FKM	V70010	V70010	V70111	V70111	V70111

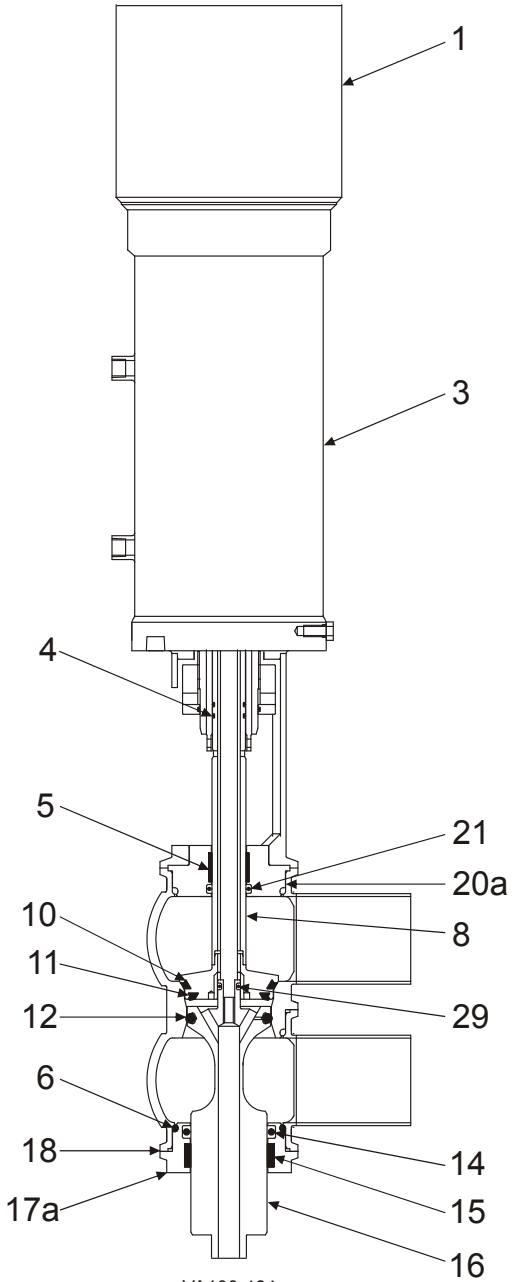
Notes: PL5027-CH52

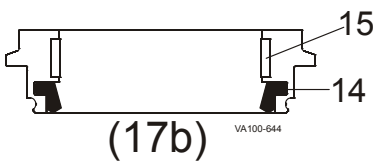
* Recommended Spare Parts

*** See actuator parts lists

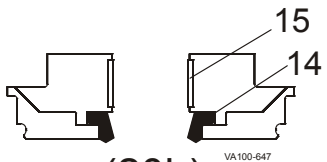
1. For items 8 and 16, see W72RS Mix Proof Non-Seat Lift with External Flush Valve Stems Chart.

W72RS Mix Proof Seat Lift Valve





(17b)



(20b)

W72RS Mix Proof Seat Lift Valve

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	4	**O-ring**	**Nitrile**	N90016	N90016	N90020	N90020	N90020
*	5	**Bearing**		102757	102757	106047	106047	106047
*	6	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	10	**Seat Ring - Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	11	**Seat Ring - Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	12	**Seat Ring - O-ring, Lower**	**EPDM**	E80319	E80325	E80329	E80333	E80340
			FKM	V80319	V80325	V80329	V80333	V80340
	14	**O-ring, Lower**	**EPDM**	E70322	E70327	E70331	E70335	E70342
*			**FKM**	V70322	V70327	V70331	V70335	V70342
		Quad Ring, Lower	**EPDM**	122690	35413	117992	117561	116952
			FKM	122689	35414	117993	117562	116953
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116190	116195	116199
			FKM	116187	116189	116191	116196	116200
	15	Bearing		101947	102000	106049	106048	102003
	16	Stem, Lower Assembly - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	20a	Adapter, O-ring or Quad Ring		111043	111017	111196	111026	111029
	20b	Adapter, Wiping Stem Seal		119441	119442	119443	119444	119445
*	21	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
			FKM	V70210	V70210	V70214	V70214	V70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
		Wiping Stem Seal, Upper	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
*	29	**O-ring**	**EPDM**	E70109	E70109	E70113	E70113	E70113
			FKM	V70109	V70109	V70113	V70113	V70113

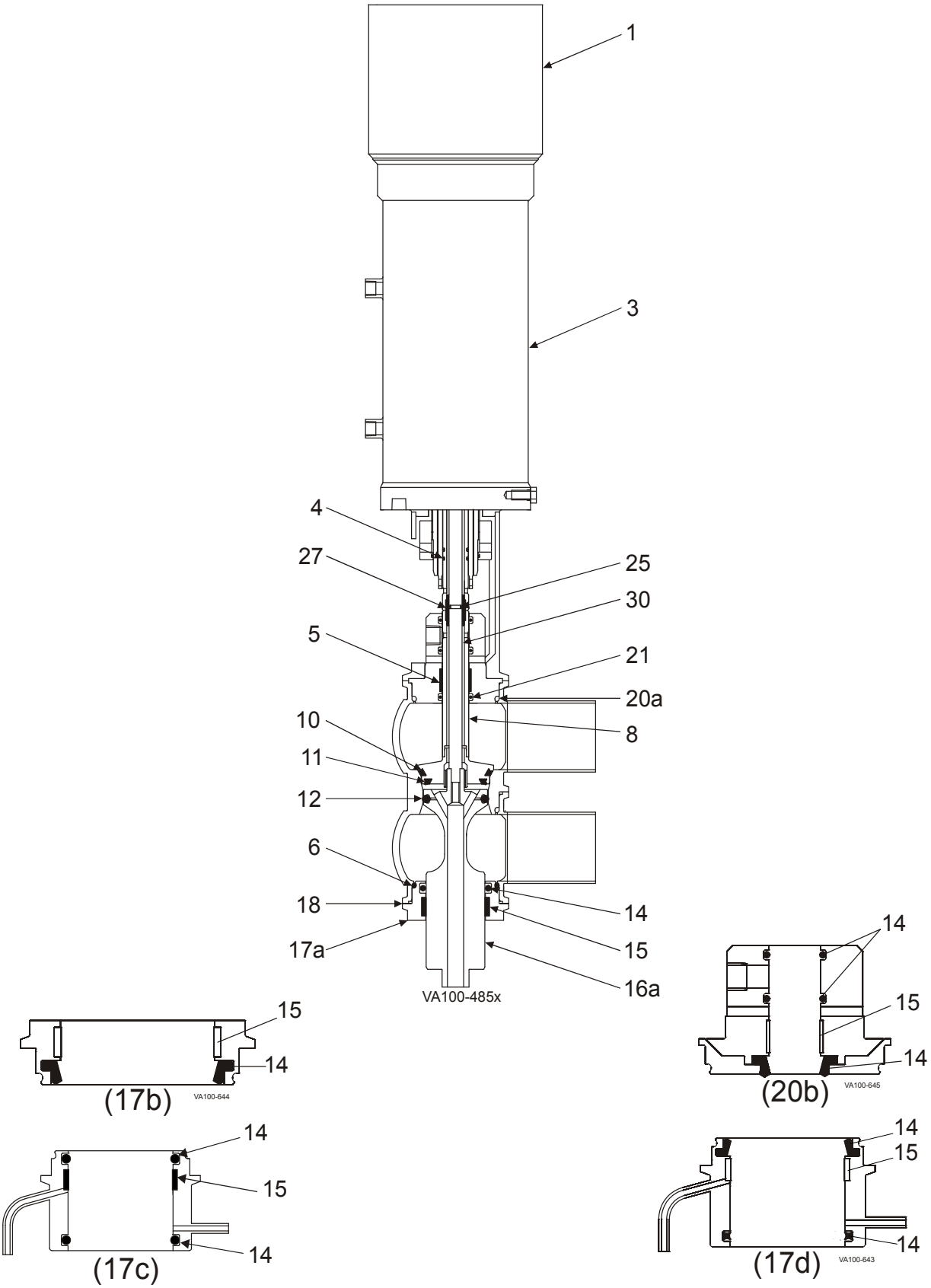
* Recommended Spare Parts

PL5027-CH53

*** See actuator parts lists

1. For items 8 and 16, see W72RS Mix Proof Seat Lift Valve Stems Chart.

W72RS Mix Proof Seat Lift Valve with External Flush



W72RS Mix Proof Seat Lift Valve with External Flush

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	**4**	**O-ring**	**Nitrile**	N90016	N90016	N90020	N90020	N90020
*	**5**	**Bearing**		102757	102757	106047	106047	106047
*	**6**	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	**10**	**Seat Ring - Tri Ring, Upper**	**EPDM**	106031	107694	107048	102488	102491
			FKM	107990	107985	107982	107974	107977
*	**11**	**Seat Ring - Tri Ring, Vent**	**EPDM**	106041	106031	107696	107697	102490
			FKM	107992	107990	107987	107988	107976
*	**12**	**Seat Ring - O-ring, Lower**	**EPDM**	E80319	E80325	E80329	E80333	E80340
			FKM	V80319	V80325	V80329	V80333	V80340
	14	**O-ring, Lower**	**EPDM**	E70322	E70327	E70331	E70335	E70342
*			**FKM**	V70322	V70327	V70331	V70335	V70342
		Quad Ring, Lower	**EPDM**	122690	35413	117992	117561	116952
			FKM	122689	35414	117993	117562	116953
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116190	116195	116199
			FKM	116187	116189	116191	116196	116200
*	**15**	**Bearing**		101947	102000	106049	106048	102003
	16a	Stem, Lower Assembly - See note 1, below						
	16b	Stem, Lower Flush - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	17c	Seal Retainer, Lower Flush, O-Ring or Quad Ring		114918	117728	114920	117736	118364
	17d	Seal Retainer, Lower Flush, Wiping Stem Seal		119050	119036	118226	117559	118253
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	19	Spray Bushing		106030	106030	118210	118210	118210
	20a	Adapter, O-ring or Quad Ring		106020	106021	106022	106023	106024
	20b	Adapter, Wiping Stem Seal		119467	119468	119469	119470	119471
*	**21**	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
			FKM	V70210	V70210	V70214	V70214	V70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
*		**Wiping Stem Seal, Upper**	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
*	**25**	**O-ring**	**EPDM**	E70010	E70010	E70111	E70111	E70111
			FKM	V70010	V70010	V70111	V70111	V70111

Notes:

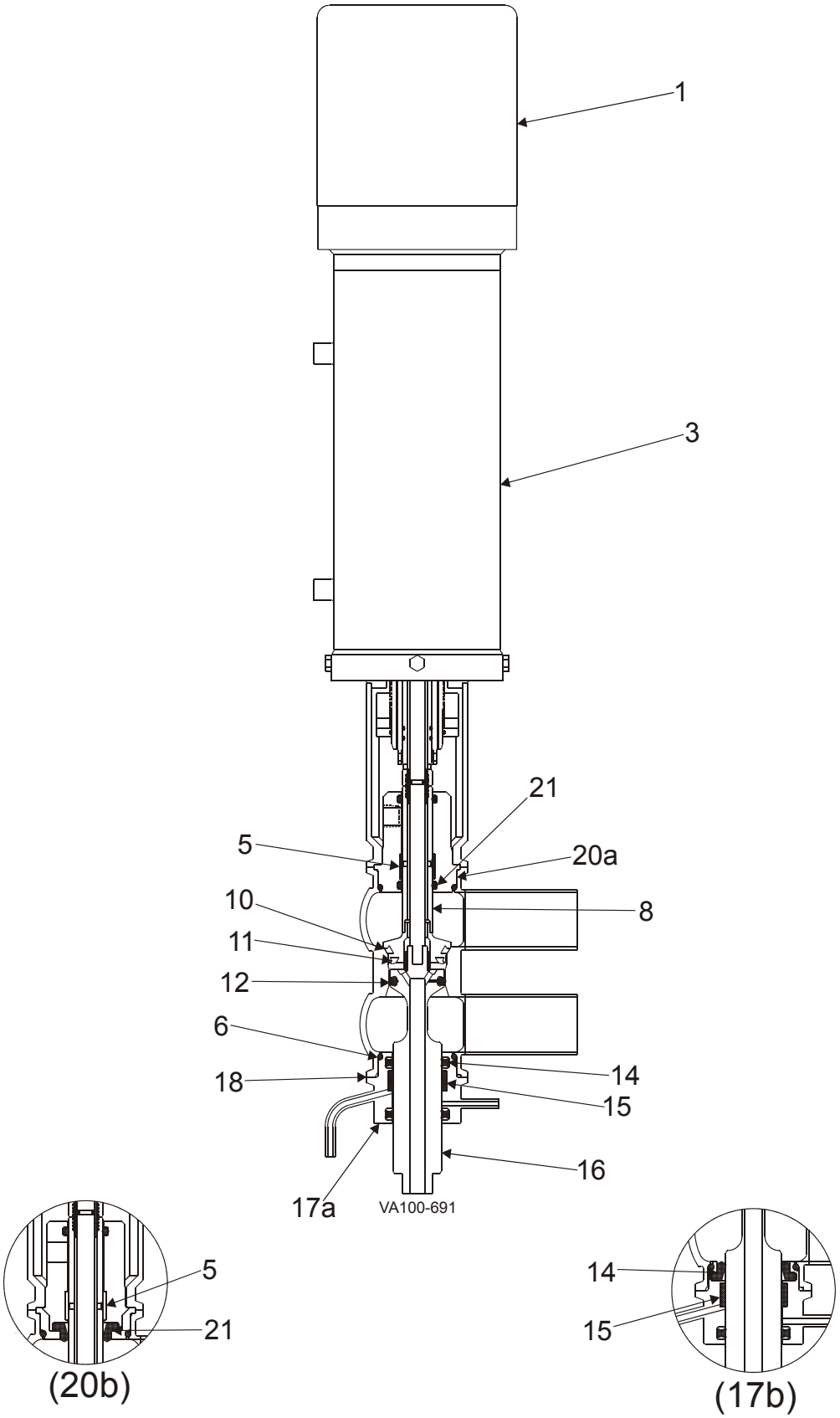
PL5027-CH54

* Recommended Spare Parts

*** See actuator parts lists

1. For items 8 and 16, see W72RS Mix Proof Seat Lift with External Flush Valve Stems Chart.

W72RS Mix Proof Seat Lift Valve with Steam Adapter



W72RS Mix Proof Seat Lift Valve with Steam Adapter

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	**4**	**O-ring**	**Nitrile**	N90016	N90016	N90020	N90020	N90020
*	**5**	**Bearing**		102757	102757	106047	106047	106047
*	**6**	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	**10**	**Seat Ring - Tri Ring, Upper**	**EPDM**	106031	107694	107048	102488	102491
			FKM	107990	107985	107982	107974	107977
*	**11**	**Seat Ring - Tri Ring, Vent**	**EPDM**	106041	106031	107696	107697	102490
			FKM	107992	107990	107987	107988	107976
*	**12**	**Seat Ring - O-ring, Lower**	**EPDM**	E80319	E80325	E80329	E80333	E80340
			FKM	V80319	V80325	V80329	V80333	V80340
*	**14**	**O-ring, Lower**	**EPDM**	E70322	E70327	E70331	E70335	E70342
		Quad Ring, Lower	**EPDM**	122690	35413	117992	117561	116952
*		**Wiping Stem Seal, Lower**	**EPDM**	116186	116188	116190	116195	116199
*	**15**	**Bearing**		101947	102000	106049	106048	102003
	16	Stem, Lower Assembly - See note 1, below						
	17a	Seal Retainer, Lower Flush, O-Ring or Quad Ring		114918	117728	114920	117736	118364
	17b	Seal Retainer, Lower Flush, Wiping Stem Seal		119050	119036	118226	117559	118253
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	19	Spray Bushing		106030	106030	118210	118210	118210
	20a	Adapter, O-ring or Quad Ring		114923	114924	114925	117742	114927
	20b	Adapter, Wiping Stem Seal		119472	119473	119474	119475	119476
*	**21 a/c**	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
*		**Wiping Stem Seal, Upper**	**EPDM**	116183	116183	116184	116184	116184
*	**25**	**O-ring**	**EPDM**	E70010	E70010	E70111	E70111	E70111
			FKM	V70010	V70010	V70111	V70111	V70111

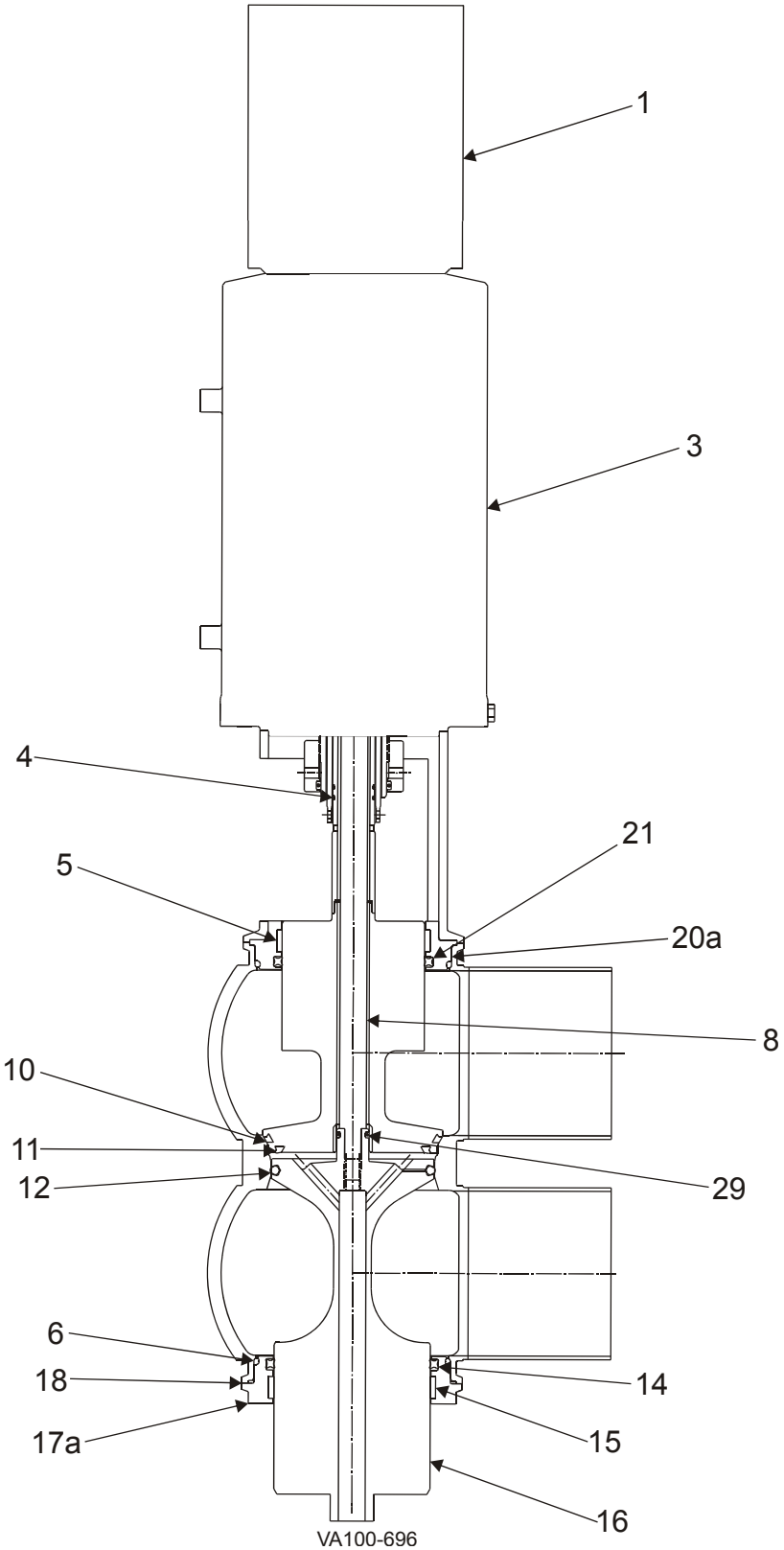
Notes: PL5027-CH89

* Recommended Spare Parts

*** See actuator parts lists

1. For items 8 and 16, see W72RS Mix Proof Seat Lift with Steam Adapter Valve Stems Chart.
   EPDM recommended on all steam-contact seals. For FKM use "V" in front of the part number instead of "E."

W72RS Mix Proof Seat Lift Valve with Upper Balancer Option



W72RS Mix Proof Seat Lift Valve with Upper Balancer Option

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	4	**O-ring**	**Nitrile**	POA	N90016	POA	N90020	N90020
*	5	**Bearing**		POA	126066	POA	102002	126069
*	6	**O-ring, Body**	**EPDM**	POA	E70228	POA	E70236	E70244
			FKM	POA	V70228	POA	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	10	**Seat Ring - Tri Ring, Upper**	**EPDM**	POA	102736	POA	102488	102491
			FKM	POA	107980	POA	107974	107977
*	11	**Seat Ring - Tri Ring, Vent**	**EPDM**	POA	107693	POA	107697	102490
			FKM	POA	107984	POA	107988	107976
*	12	**Seat Ring - O-ring, Lower**	**EPDM**	POA	E80325	POA	E80333	E80340
			FKM	POA	V80325	POA	V80333	V80340
*	14	**Quad Ring, Lower**	**EPDM**	POA	122689	POA	117561	116952
			FKM	POA	122690	POA	117562	116953
*		**Wiping Stem Seal, Lower**	**EPDM**	POA	POA	POA	POA	POA
			FKM	POA	POA	POA	POA	POA
	15	Bearing		POA	102000	POA	106048	102003
	16	Stem, Lower Assembly - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		POA	106067	POA	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		POA	POA	POA	POA	POA
	18	Clamp		POA	119-33	POA	119-51	119-87
	20a	Adapter, O-ring or Quad Ring		POA	126041	POA	126050	126057
	20b	Adapter, Wiping Stem Seal		POA	POA	POA	POA	POA
*	21	**Quad Ring, Upper**	**EPDM**	POA	126065	POA	116954	126071
			FKM	POA	126064	POA	116955	126070
*		**Wiping Stem Seal, Upper**	**EPDM**	POA	POA	POA	POA	POA
			FKM	POA	POA	POA	POA	POA
*	29	**O-ring**	**EPDM**	POA	E70109	POA	E70113	E70113
			FKM	POA	V70109	POA	V70113	V70113

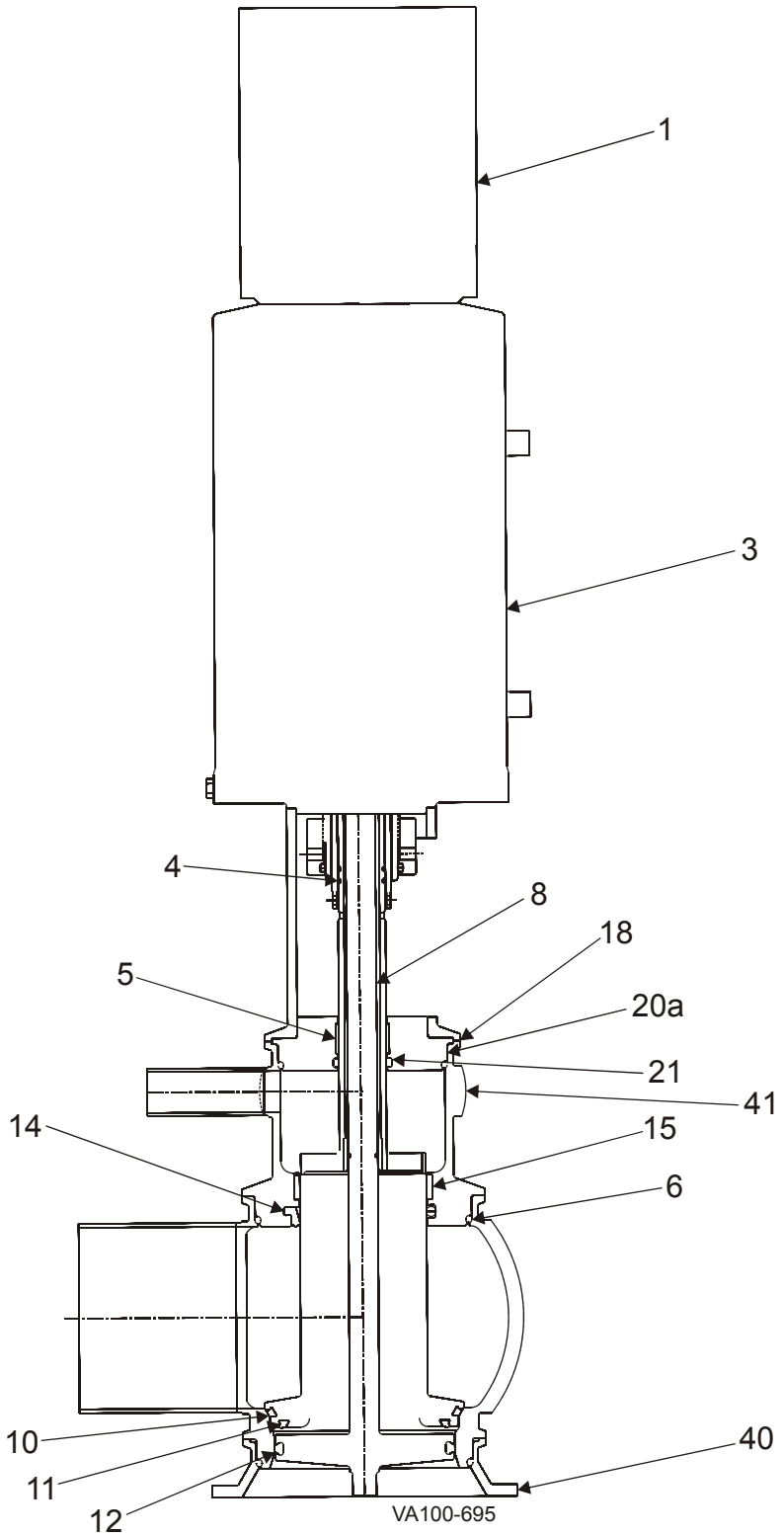
* Recommended Spare Parts

PL5027-CH135

*** See actuator parts lists

1. For items 8 and 16, see W72RS Mix Proof Seat Lift with Upper Balancer Option Valve Stems Chart.

W72RS Mix Proof Seat Lift Valve with Tank Outlet



W72RS Mix Proof Seat Lift Valve with Tank Outlet

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator Assembly		POA	POA	POA	126096	126097
*	**4**	**O-ring**	**Nitrile**	POA	POA	POA	N90020	N90020
*	**5**	**Bearing**		POA	POA	POA	106047	106047
*	**6**	**O-ring, Body**	**EPDM**	POA	POA	POA	E70236	E70244
			FKM	POA	POA	POA	V70236	V70244
	8	Stem, Upper - See note 1, below						
*	**10**	**Seat Ring - Tri Ring, Upper**	**EPDM**	POA	POA	POA	102488	102491
			FKM	POA	POA	POA	107974	107976
*	**11**	**Seat Ring - Tri Ring, Vent**	**EPDM**	POA	POA	POA	107697	102490
			FKM	POA	POA	POA	107988	107977
*	**12**	**Seat Ring - O-ring, Lower**	**EPDM**	POA	POA	POA	E80333	E80340
			FKM	POA	POA	POA	V80333	V80340
	14	**O-ring, Lower**	**EPDM**	POA	POA	POA	POA	POA
*			**FKM**	POA	POA	POA	POA	POA
		Quad Ring, Lower	**EPDM**	POA	POA	POA	POA	POA
			FKM	POA	POA	POA	POA	POA
		Wiping Stem Seal, Lower	**EPDM**	POA	POA	POA	116190	116195
			FKM	POA	POA	POA	POA	116196
	15	Bearing		POA	POA	POA	106049	106048
	16	Stem, Lower Assembly - See note 1, below						
	18	Clamp		POA	POA	POA	119-51	119-87
	20a	Adapter, O-ring or Quad Ring		POA	POA	POA	111196	111026
	20b	Adapter, Wiping Stem Seal		POA	POA	POA	POA	POA
*	**21**	**O-ring, Upper Stem**	**EPDM**	POA	POA	POA	E70214	E70214
			FKM	POA	POA	POA	V70214	V70214
		Quad Ring, Upper	**EPDM**	POA	POA	POA	124163	124163
			FKM	POA	POA	POA	121299	121299
		Wiping Stem Seal, Upper	**EPDM**	POA	POA	POA	POA	POA
			FKM	POA	POA	POA	POA	POA
*	**25**	**O-ring**	**EPDM**	POA	POA	POA	E70111	E70111
			FKM	POA	POA	POA	V70111	V70111
	40	Tank Flange		POA	POA	POA	114832	114833
	41	Chamber		POA	POA	POA	125962	126025

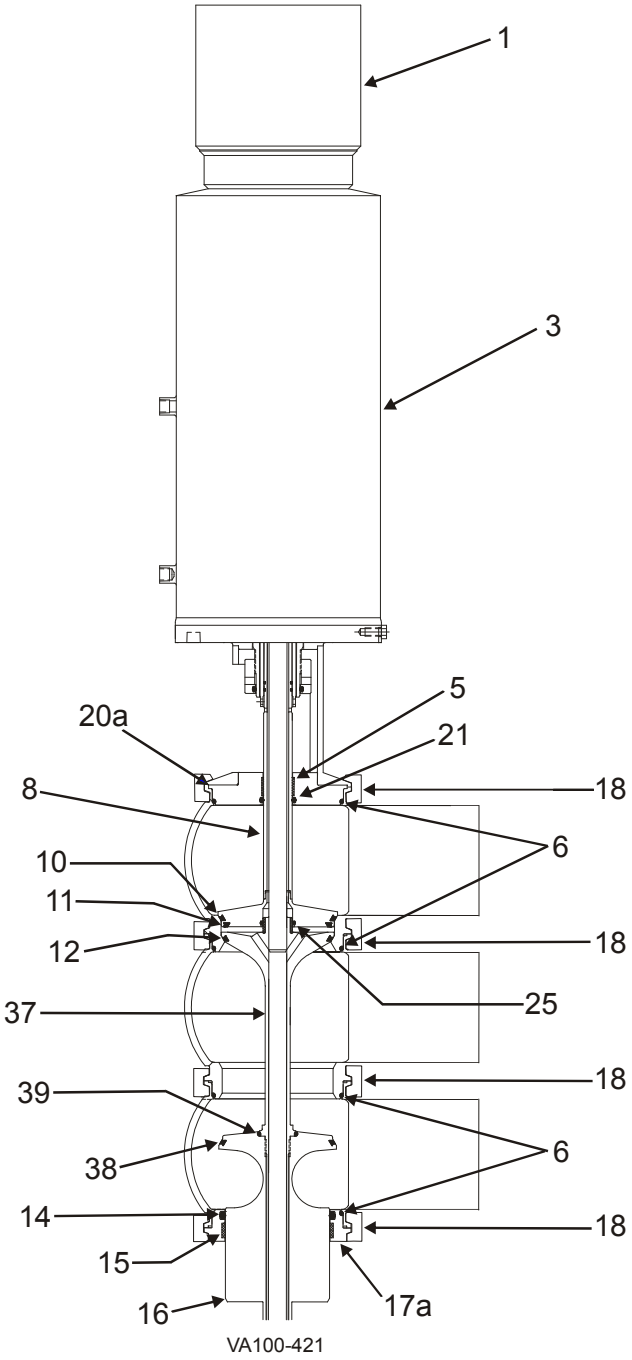
* Recommended Spare Parts

PL5027-CH134

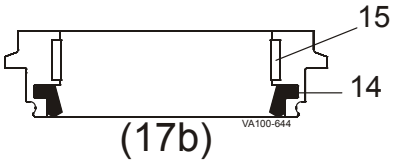
*** See actuator parts lists

1. For items 8 and 16, see W72RS Mix Proof Seat Lift with Tank Outlet Valve Stems Chart.

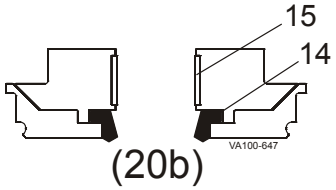
W73 Divert Mix Proof Seat Lift Valve



VA100-421



(17b)



(20b)

W73 Divert Mix Proof Seat Lift Valve

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	4	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
*	5	**Bearing**		102757	102757	106047	106047	106047
*	6	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper - See note 1, below						
*	10	**Seat Ring -Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	11	**Seat Ring -Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	12	**Seat Ring -Tri Ring, Lower**	**EPDM**	106036	107693	102487	102489	102492
			FKM	107991	107984	107973	107975	107978
	14	**O-ring, Lower Stem**	**EPDM**	E70322	E70327	E70331	E70335	E70342
*			**FKM**	V70322	V70327	V70331	V70335	V70342
		Quad Ring, Lower	**EPDM**	122690	35413	117992	117561	116952
			FKM	122689	35414	117993	117562	116953
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116190	116195	116199
			FKM	116187	116189	116191	116196	116200
	15	Bearing		101947	102000	106049	106048	102003
	16	Stem, Lower Assembly - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	20a	Adapter, O-ring or Quad Ring		111043	111017	111196	111026	111029
	20b	Adapter, Wiping Stem Seal		119467	119468	119469	119470	119471
*	21	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
			FKM	V70210	V70210	V70214	V70214	V70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
		Wiping Stem Seal, Upper	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
*	25	**O-ring**	**EPDM**	E70115	E70115	E70121	E70121	E70121
			FKM	V70115	V70115	V70121	V70121	V70121
*	26	**O-ring**	**Nitrile**	N80016	N80016	N80020	N80020	N80020
	37	Stem, Middle		116684	116957	116390	114505	115659
*	38	**Tri Ring, Divert Stem**	**EPDM**	106036	107693	107048	111633	102492
			FKM	107991	107984	107982	111635	107978
*	39	**O-ring, Divert stem**	**EPDM**	E70210	E70215	E70217	E70217	E70217
			FKM	V70210	V70215	V70217	V70217	V70217

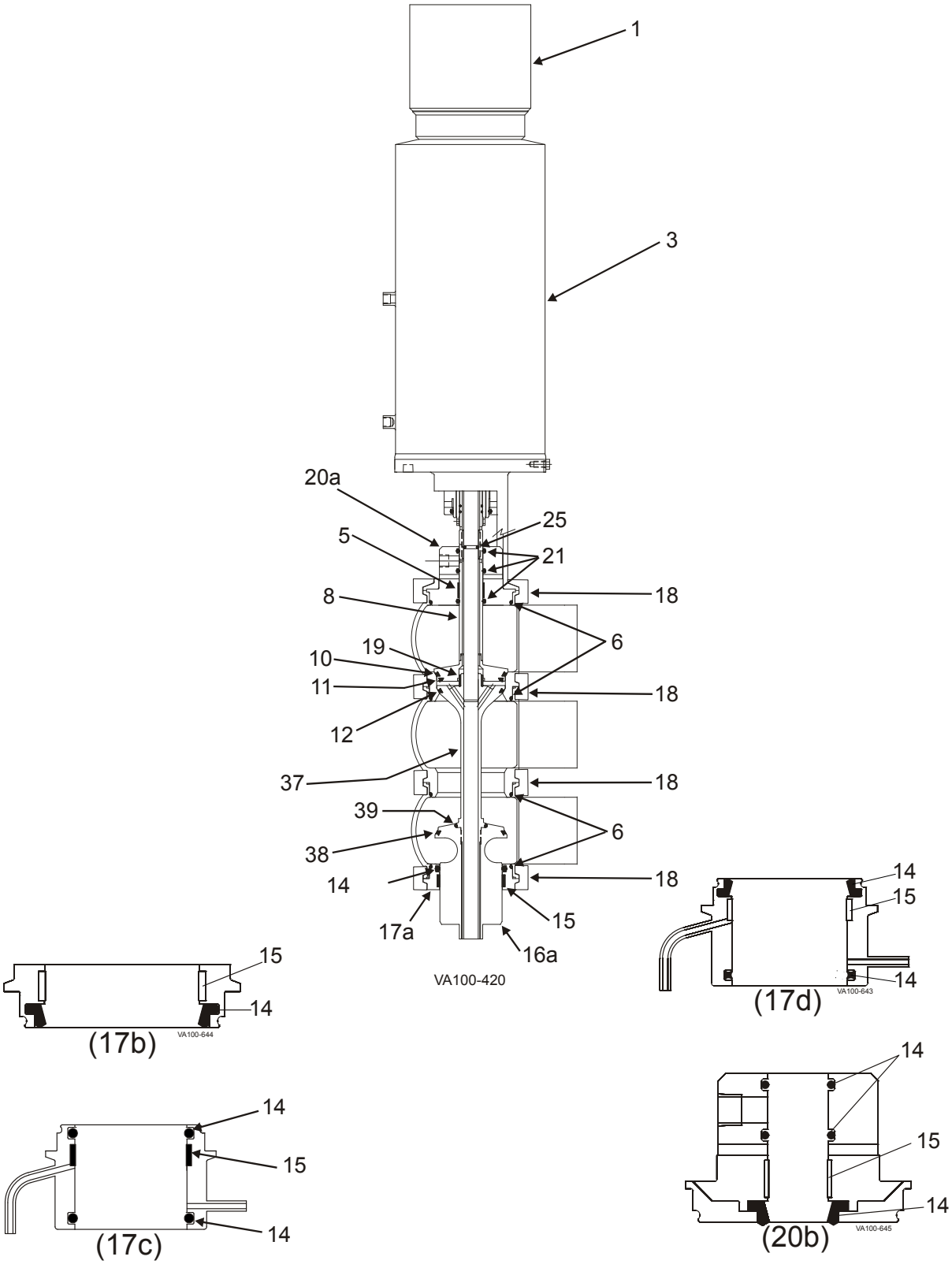
Notes: PL5027-CH55

* Recommended Spare Parts

*** See actuator parts lists

1. For items 8 and 16, see W73 Mix Proof Seat Lift Valve Stems Chart.

W73 Divert Mix Proof Seat Lift Valve with External Flush



W73 Divert Mix Proof Seat Lift Valve with External Flush

	Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"
	1	Control Top		Contact Factory				
	3	Actuator		***				
*	**4**	**O-ring**	**Nitrile**	N70010	N70010	N70111	N70111	N70111
*	**5**	**Bearing**		102757	102757	106047	106047	106047
*	**6**	**O-ring, Body**	**EPDM**	E70223	E70228	E70232	E70236	E70244
			FKM	V70223	V70228	V70232	V70236	V70244
	8	Stem, Upper Assembly - See note 1, below						
*	**10**	**Seat Ring -Tri Ring, Upper**	**EPDM**	106031	102736	107048	102488	102491
			FKM	107990	107980	107982	107974	107977
*	**11**	**Seat Ring -Tri Ring, Vent**	**EPDM**	106041	107693	107696	107697	102490
			FKM	107992	107984	107987	107988	107976
*	**12**	**Seat Ring -Tri Ring, Lower**	**EPDM**	106036	107693	102487	102489	102492
			FKM	107991	107984	107973	107975	107978
	14	**O-ring, Lower Stem**	**EPDM**	E70322	E70327	E70331	E70335	E70342
*			**FKM**	V70322	V70327	V70331	V70335	V70342
		Quad Ring, Lower	**EPDM**	122690	35413	117992	117561	116952
			FKM	122689	35414	117993	117562	116953
		Wiping Stem Seal, Lower	**EPDM**	116186	116188	116190	116195	116199
			FKM	116187	116189	116191	116196	116200
*	**15**	**Bearing**		101947	102000	106049	106048	102003
	16a	Stem, Lower Assembly - See note 1, below						
	16b	Stem, Lower Flush - See note 1, below						
	17a	Seal Retainer, O-ring or Quad Ring		106066	106067	106068	106069	106070
	17b	Seal Retainer, Wiping Stem Seal		117444	117445	117446	117447	117448
	17c	Seal Retainer, Lower Flush, O-ring or Quad Ring		114918	114919	114920	114921	114922
	17d	Seal Retainer, Lower Flush, Wiping Stem Seal		119050	119035	118226	117559	118253
	18	Clamp		119-30	119-33	119-34	119-51	119-87
	19	Spray Bushing		106030	106030	107950	107950	107950
	20a	Adapter, O-ring or Quad Ring		106020	106021	106022	106023	106024
	20b	Adapter, Wiping Stem Seal		119482	119483	119484	119485	119486
*	**21**	**O-ring, Upper Stem**	**EPDM**	E70210	E70210	E70214	E70214	E70214
			FKM	V70210	V70210	V70214	V70214	V70214
		Quad Ring, Upper	**EPDM**	121300	121300	124163	124163	124163
			FKM	124088	124088	121299	121299	121299
		Wiping Stem Seal, Upper	**EPDM**	116183	116183	116184	116184	116184
			FKM	115626	115626	116185	116185	116185
*	**25**	**O-ring**	**EPDM**	E70010	E70010	E70111	E70111	E70111
			FKM	V70010	V70010	V70111	V70111	V70111
*	**26**	**O-ring**	**Nitrile**	N80016	N80016	N80020	N80020	N80020
	37	Stem, Middle		116684	115910	116390	114505	115661
*	**38**	**Tri Ring, Divert Stem**	**EPDM**	106036	107693	107048	111633	102492
			FKM	107991	107984	107982	111635	107978
*	**39**	**O-ring, Divert stem**	**EPDM**	E70210	E70215	E70217	E70217	E70217
			FKM	V70210	V70215	V70217	V70217	V70217

Notes: PL5027-CH56

* Recommended Spare Parts

*** See actuator parts lists

1. For items 8 and 16, see W73 Divert Mix Proof Seat Lift with External Flush Valve Stems Chart.

Valve Stems

W71 Mix Proof Non-Seat Lift

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper	116615	115788	115663	115648	115793
16	Stem, Lower Assembly[1]	118150	118151	118152	118153	118154

PL5027-CH104

W71 Mix Proof Non-Seat Lift with External Flush

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper Assembly[2, 4]	106015	106016	106017	106018	106019
16a	Stem, Lower Assembly[3]	106051	106052	106053	106054	106055
16b	Stem, Lower Flush	POA	POA	POA	POA	POA
24	Stem, Actuator	107790	107756	107949	107949	107949

PL5027-CH105

W71 Mix Proof Seat Lift

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper	111042	111014	111052	111022	111049
16	Stem, Lower Assembly[1]	118247	118248	118249	118250	118251

PL5027-CH106

W71 Mix Proof Seat Lift with External Flush

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper Assembly[1]	119199	119200	119201	119202	119204
16a	Stem, Lower Assembly[3]	111499	111513	111519	111520	111524
16b	Stem, Lower Flush	POA	POA	POA	POA	POA

PL5027-CH107

W71 Mix Proof Non-Seat Lift with Steam Adapter

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper Assembly[2]	106015	106016	106017	106018	106019
16	Stem, Lower Assembly[3]	114933	114934	114935	114936	114937
24	Stem, Actuator	107790	107756	107949	107949	107949

PL5027-CH130

W71 Mix Proof Seat Lift with Steam Adapter

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper Assembly[5]	119199	119200	119201	119202	119204
16	Stem, Lower Assembly[3]	118241	118409	118243	118244	118245

PL5027-CH131

1. Part number includes lower stem and stem bushing, which are assembled together.
2. Part number includes upper stem and coupling sleeve, which are assembled together.
3. Part number includes lower stem and inner stem, which are assembled together.
4. A separate actuator stem mates with item 8.
5. Part number includes upper stem, outer stem and coupling sleeve, which are assembled together.
6. Part number includes upper stem, outer stem and outer stem bushing, which are assembled together.

PL5027-CH138

Valve Stems, continued

W72RS Mix Proof Non-Seat Lift

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper	119268	118484	119281	118534	119346
16	Stem, Lower Assembly[3]	119477	119478	119479	119480	119481

PL5027-CH102

W72RS Mix Proof Non-Seat Lift with External Flush

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper Assembly[5]	119447	119448	119449	119450	119451
16a	Stem, Lower Assembly[3]	POA	120893	125484	120894	POA
16b	Stem, Lower Flush	POA	POA	POA	POA	POA
24	Stem, Actuator	122389	118642	118625	118625	107949

PL5027-CH108

W72RS Mix Proof Seat Lift

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper	113390	113091	113263	113102	113265
16	Stem, Lower Assembly[3]	119436	119437	119438	119439	119440

PL5027-CH121

W72RS Mix Proof Seat Lift with External Flush

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper Assembly[5]	119447	119448	119449	119450	119451
16a	Stem, Lower Assembly[3]	119457	119458	119459	119460	119461
16b	Stem, Lower Flush	POA	POA	POA	POA	POA

PL5027-CH122

W72RS Mix Proof Seat Lift with Steam Adapter

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper Assembly[5]	119452	119453	119454	119455	119456
16	Stem, Lower Assembly[3]	119462	119463	119464	119465	119466

PL5027-CH133

W72RS Mix Proof Seat Lift with Upper Balancer Option

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper	POA	126052	POA	126043	126059
16	Stem, Lower Assembly[3]	119436	119437	119438	119439	119440

PL5027-CH137

W72RS Mix Proof Seat Lift with Tank Outlet

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Inner (Tank Side)	POA	POA	POA	125967	126024
16	Stem, Outer (Pipe Side)	POA	POA	POA	125970	126020

PL5027-CH136

Valve Stems, continued

W73 Divert Mix Proof Seat Lift

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper	111042	111014	111052	111022	111049
16	Stem, Lower Assembly[1]	118319	118320	118321	118322	118323

PL5027-CH124

W73 Divert Mix Proof Seat Lift with External Flush

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
8	Stem, Upper Assembly[6]	119200	119201	119202	119203	119204
16a	Stem, Lower Assembly[1]	POA	POA	POA	POA	POA
16b	Stem, Lower Flush	POA	POA	POA	POA	POA

PL5027-CH126

1. Part number includes lower stem and stem bushing, which are assembled together.
2. Part number includes upper stem and coupling sleeve, which are assembled together.
3. Part number includes lower stem and inner stem, which are assembled together.
4. A separate actuator stem mates with item 8.
5. Part number includes upper stem, outer stem and coupling sleeve, which are assembled together.
6. Part number includes upper stem, outer stem and outer stem bushing, which are assembled together.

PL5027-CH138

Installation Tools

W71/W73 Valves

Item
Tri Ring Tool (Figure 27)
4" Actuator Rebuild Insertion Sleeve (Figure 28)

W72 RS Valves

Item
Tri Ring Tool (Figure 27)
Seal Insertion Collar Tool (Figure 29)

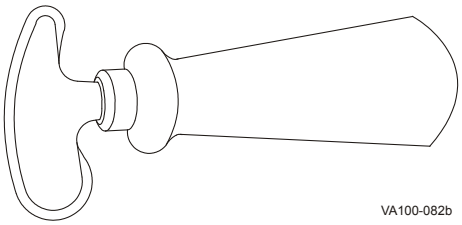


Figure 27 - Tri Ring Tool

Tri Ring Tool	102797

PL5027-CH85

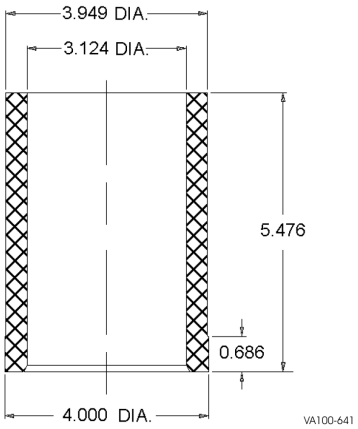


Figure 28 - 4" Actuator Rebuild Insertion Sleeve

4" Actuator Rebuild Insertion Sleeve	111840

PL5027-CH90

The insertion sleeve is available from WCB using the part number above or it can be created by most machine shops using #6 nylon round stock. See insertion sleeve dimensions in Figure 28.

- Material is #6 nylon round stock.
- Bevel the inside and outside end corners.

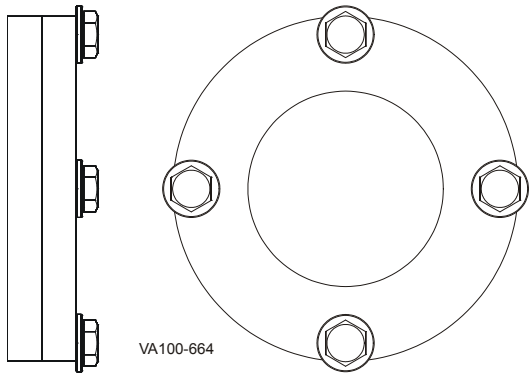


Figure 29 - Seal Insertion Collar Tool

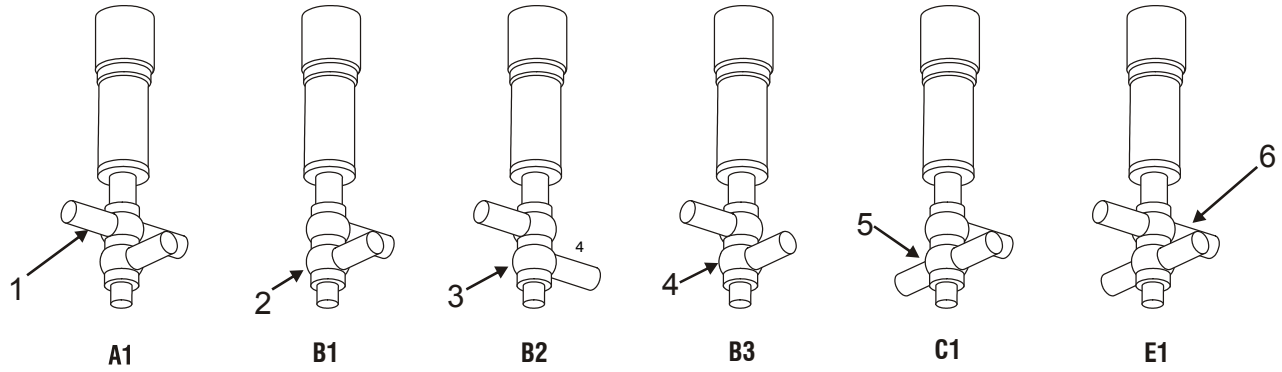
Seal Insertion Collar Tool, according to Valve Size:

VALVE SIZE	1-1/2"	2"	2-1/2"	3"	4"	6"
PART NO.	120048	120049	120051	120053	120055	120057

PL5027-CH67

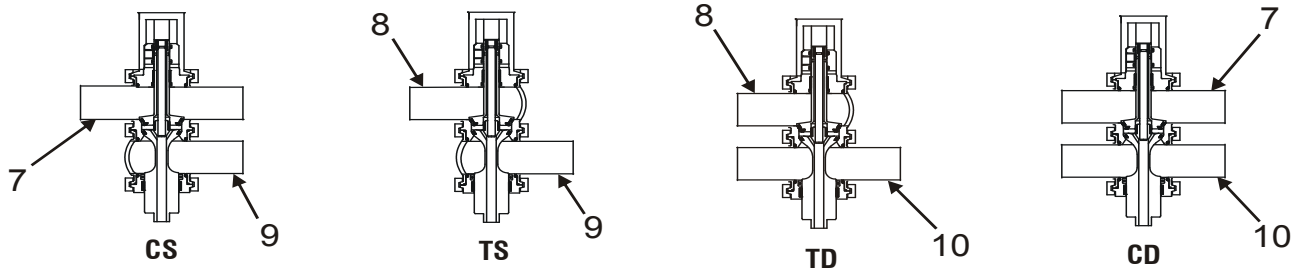
Mix Proof Valve Bodies for W71, W72RS and W73 Valves

W71 & W72RS One Piece Bodies



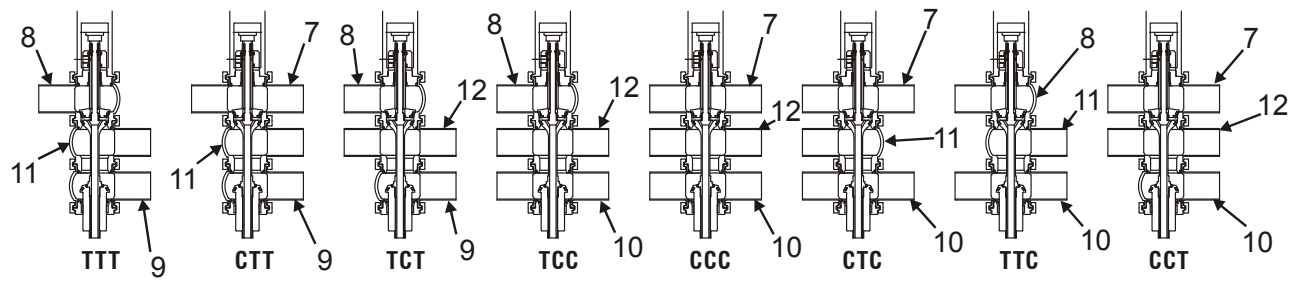
VA100-436b

W71 & W72RS Two Piece Clamped Bodies *



VA100-436c

W73-Divert Three Piece Clamped Bodies *



VA100-436d

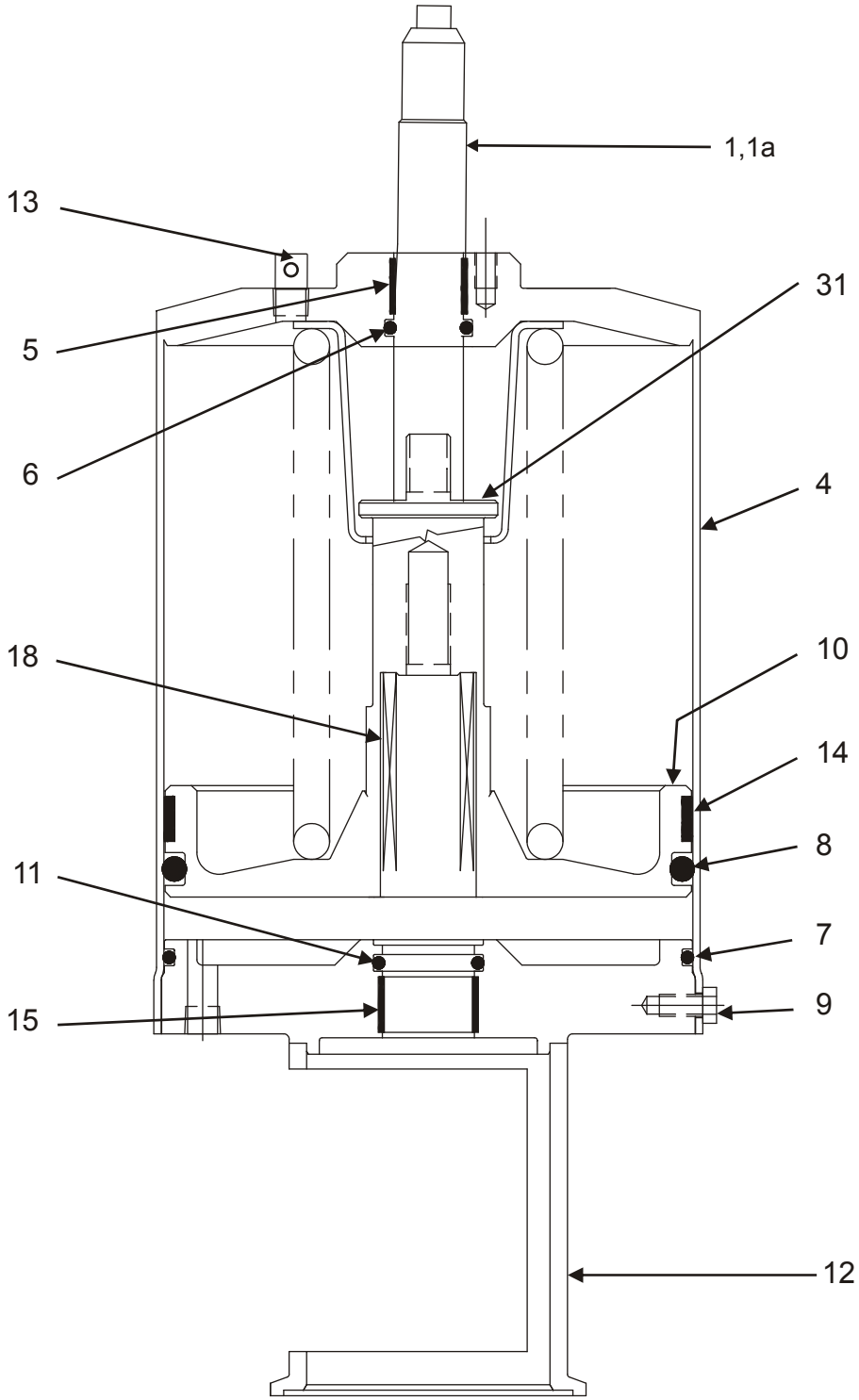
* Clamped bodies allow for ports to be rotated in any direction.

Mix Proof Valve Bodies for W71, W72RS and W73 Valves

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
W71 One Piece Body						
1	Buttweld - A1	107758	107803	107898	107922	107945
2	Buttweld - B1	107760	107805	107900	107924	107947
3	Buttweld - B2	114652	112515	114458	113726	114579
4	Buttweld - B3	107761	107806	107901	107925	107948
5	Buttweld - C1	107759	107804	107899	107923	107946
6	Buttweld - E1	107757	107802	107897	107921	107944
W72RS One Piece Body						
1	Buttweld - A1	113274	113082	113268	113076	113254
2	Buttweld - B1	113276	113084	113270	113078	113256
3	Buttweld - B2	113277	113085	113271	114835	113257
4	Buttweld - B3	113278	113086	113272	113079	113258
5	Buttweld - C1	113275	113083	113269	113077	113255
6	Buttweld - E1	113273	113081	113267	113075	113253
W71/W73						
7	Upper Cross, S-Line	108560	108565	108570	108575	108580
8	Upper Tee, S-Line	108530	108535	108540	108545	108550
W72RS						
7	Upper Cross, S-Line	119488	119489	119490	119491	119492
8	Upper Tee, S-Line	119493	119494	119495	119496	119497
W71/W72RS/W73						
9	Lower Tee, S-Line	108590	108595	108600	108605	108610
10	Lower Cross, S-Line	108620	108625	108630	108635	108640
W73						
11	Middle Tee, S-Line	118262	118267	118272	118277	118282
12	Middle Cross, S-Line	118292	118297	118302	118307	118312

PL5027-CH57

W71/W73 Non-Seat Lift Actuator



W71/W73 Non-Seat Lift Actuator

	Item #	Part Description		4" Diameter[1]	6" Diameter[1]
	1	Indicator Stem - Visual		106050	107951
	1a	Indicator Stem - Control Top[2]		106003	106004
	4	Cylinder		106006	106007
*	**5**	**Bearing, Cylinder**		102757	102757
*	**6**	**O-ring**	**Nitrile**	N70210	N70210
*	**7**	**O-ring, Cylinder**	**Nitrile**	N70240	N70255
*	**8**	**O-ring, Piston**	**Nitrile**	N70342	N70433
	9	Cap Screw, 1/4-20 x .375" lg.		30-68	30-68
	10	Piston Assembly		106009	106010
*	**11**	**O-ring**	**Nitrile**	N70210	N70214
	12	Yoke	1-1/2" Valve	106119	N/A
			2" Valve	107764	N/A
			2 1/2" Valve	N/A	106120
			3" Valve	N/A	106121
			4" Valve	N/A	106118
	13	Vent Plug		3023957	3023957
*	**14**	**Bearing, Piston**		101995	102052
*	**15**	**Bearing, Yoke**		102757	106047
	18	Spring, Upper Stem		101946	5901106

Complete Actuator Assemblies

Part Description			4" Diameter[1]	6" Diameter[1]
Air-to-Raise	Visual Indicator Stem	1-1/2"	ACT00188	N/A
		2"	ACT00122	N/A
		2-1/2"	N/A	ACT00279
		3"	N/A	ACT00280
		4"	N/A	ACT00281

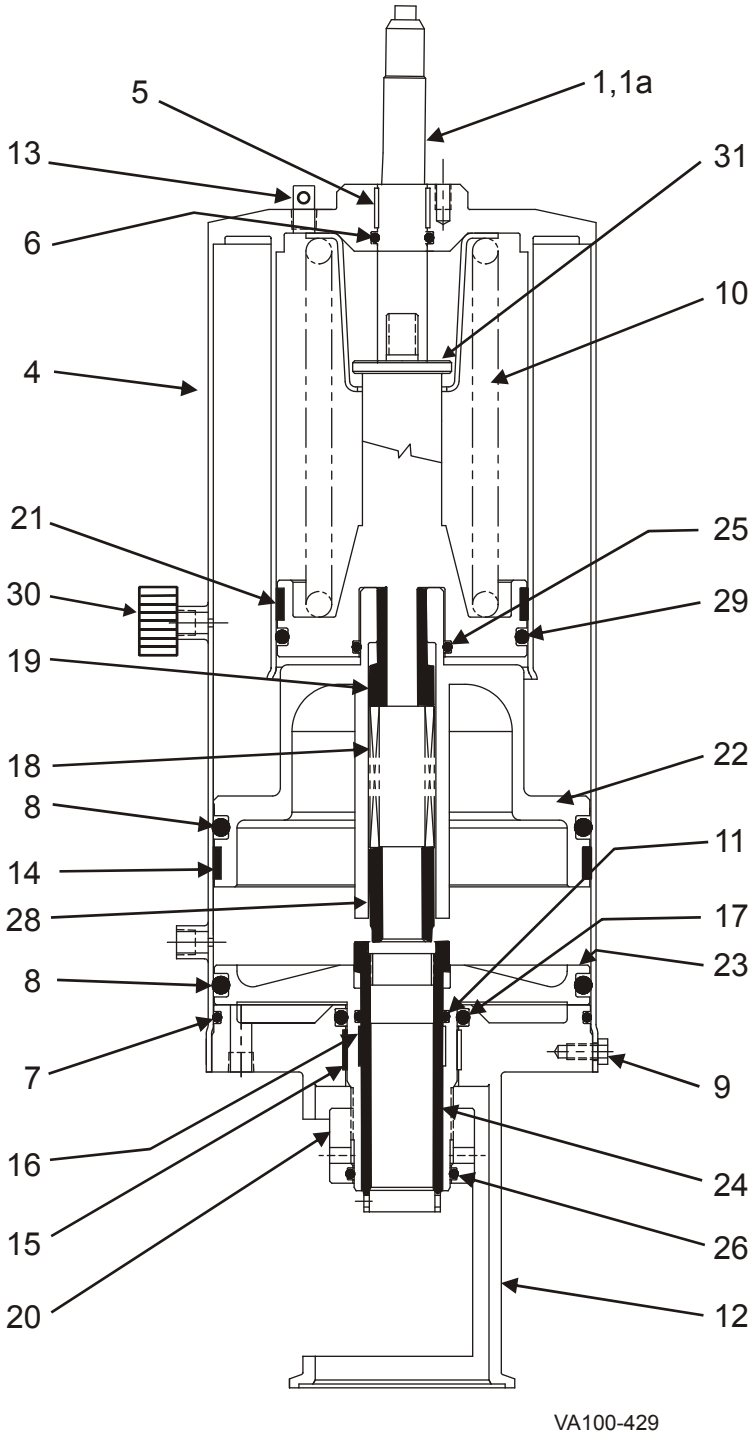
Notes: PL5027-CH58

* **Recommended Spare Parts**

[1] 4-inch diameter actuator for 1-1/2inch and 2-inch valves. 6-inch diameter actuator for 2-1/2 inch and 4-inch valves.

[2] For valves with control top, please contact factory.

W71/W73 Seat Lift Actuator



W71/W73 Seat Lift Actuator

	Item #	Part Description		4" Diameter[1]	6" Diameter[1]
	1	Indicator Stem - Visual		106050	107951
	1a	Indicator Stem - Control Top[2]		106003	106004
	4	Cylinder		111506	111491
*	**5**	**Bearing, Cylinder**		102757	102757
*	**6**	**O-ring**	**Nitrile**	N70210	N70210
*	**7**	**O-ring, Cylinder**	**Nitrile**	N70240	N70255
*	**8**	**O-ring, Piston**	**Nitrile**	N70342	N70433
	9	Cap Screw, 1/4-20 x .375" lg.		30-68	30-68
	10	Lower Seat Spring & Piston Assembly		113661	113660
*	**11**	**O-ring**	**Nitrile**	N70214	N70219
	12	Yoke	1-1/2" Valve	109823	-
			2" Valve	109940	-
			2 1/2" Valve	-	109928
			3" Valve	-	109934
			4" Valve	-	109905
	13	Vent Plug		3023957	3023957
*	**14**	**Bearing, Main Piston**		101995	102052
*	**15**	**Bearing, Lifting piston**		109820	109920
*	**16**	**Bearing**		106047	109919
	17	O-ring	Nitrile	N70222	N70328
	18	Spring, Upper Stem		101946	5901106
	19	Stop, Lifter		109817	109913
	20	Nut, Upper Seat Clean		109822	109918
	21	Bearing		111044	101995
	22	Main Piston		111510	111486
	23	Upper Seat Piston, Clean		111507	111489
	24	Adjusting Sleeve		109821	109912
	25	O-ring	Nitrile	N70216	N70219
	26	O-ring	Nitrile	N80026	N80222
	28	Bushing		112427	112517
	29	O-ring, lower seat piston	Nitrile	N70335	N70342
	30	Quick Exhaust		114680	114680

Complete Actuator Assemblies

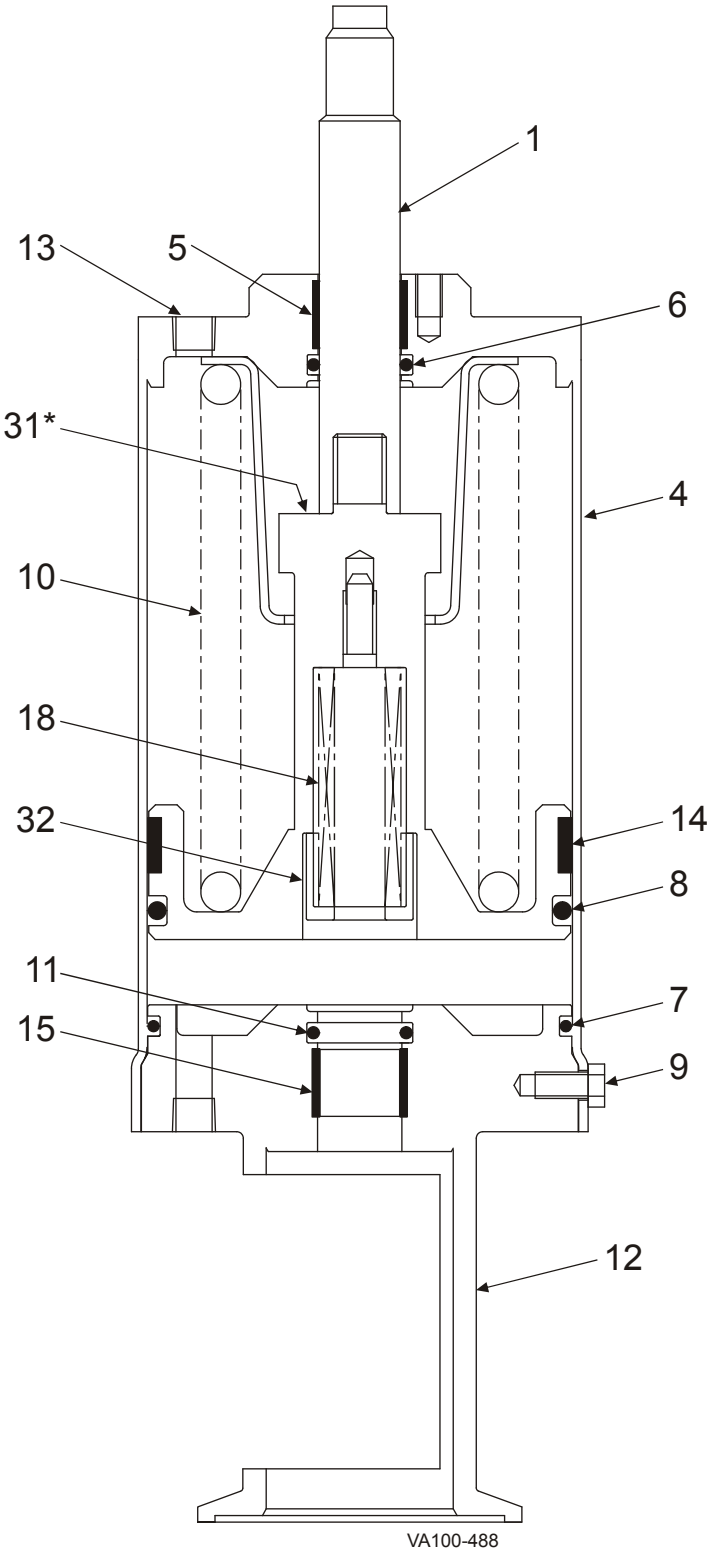
Part Description			4" Diameter[1]	6" Diameter[1]
Air-to-Raise	Visual Indicator Stem	1-1/2"	ACT00282	N/A
		2"	ACT00283	N/A
		2-1/2"	N/A	ACT00284
		3"	N/A	ACT00285
		4"	N/A	ACT00286

Notes: PL5027-CH60

* **Recommended Spare Parts**

1. 4-inch diameter actuator for 1-1/2inch and 2-inch valves. 6-inch diameter actuator for 2-1/2 inch and 4-inch valves.
2. For valves with control top, please contact factory.

W72RS Non Seat Lift Actuator



W72RS Non Seat Lift Actuator

	Item #	Part Description		4" Diameter[1]	6" Diameter[1]
	1	Indicator Stem - Visual		106050	107951
	1a	Indicator Stem - Control Top		106003	106004
	4	Cylinder		106006	106007
	5	Bearing, Cylinder		102757	102757
*	**6**	**O-ring**	**Nitrile**	N70210	N70210
*	**7**	**O-ring, Cylinder**	**Nitrile**	N70240	N70255
*	**8**	**O-ring, Piston**	**Nitrile**	N70342	N70433
	9	Cap Screw, 1/4-20 x .375" lg.		30-68	30-68
	10	Piston & Spring Assembly		118461	118530
*	**11**	**O-ring**	**Nitrile**	N70210	N70214
	12	Yoke	1-1/2"	106119	N/A
			2"	107764	N/A
			2-1/2"	N/A	106120
			3"	N/A	106121
			4"	N/A	106118
	13	Vent Plug[2]		3023957	3023957
	14	Bearing, Piston		101995	102052
	15	Bearing, Yoke		102757	106047
	18	Spring, Upper Stem		101946	5901106
	32	Spring Guide		118459	118529

Complete Actuator Assemblies

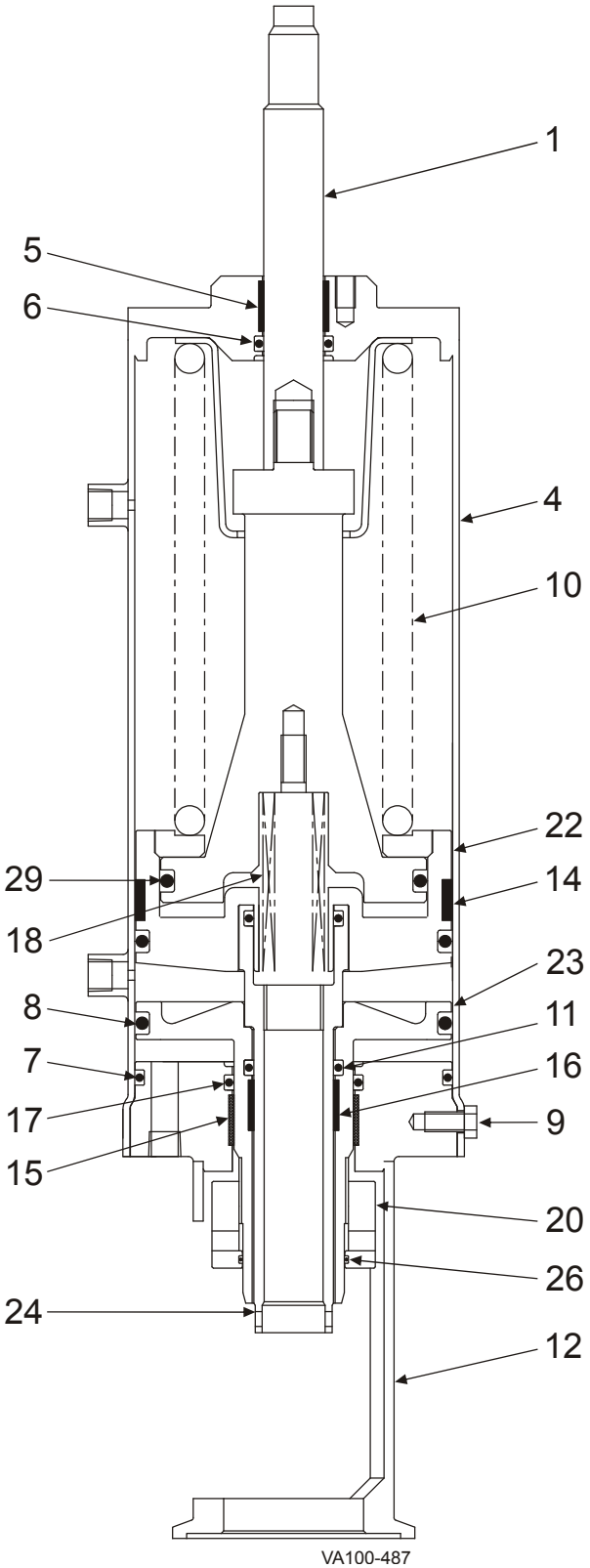
Part Description			4" Diameter[1]	6" Diameter[1]
Air-to-Raise	Visual Indicator Stem	1-1/2"	ACT00342	N/A
		2"	ACT00343	N/A
		2-1/2"	N/A	ACT00344
		3"	N/A	ACT00345
		4"	N/A	ACT00346
	Control Top Indicator Stem	1-1/2"	ACT00352	N/A
		2"	ACT00353	N/A
		2-1/2"	N/A	ACT00354
		3"	N/A	ACT00355
		4"	N/A	ACT00356

Notes: PL5027-CH62

* **Recommended Spare Parts**

1. 4-inch diameter actuator for 1-1/2inch and 2-inch valves. 6-inch diameter actuator for 2-1/2 inch and 4-inch valves.
2. Only required for valves without control top

W72RS Seat Lift Actuator



W72RS Seat Lift Actuator

	Item #	Part Description		4" Diameter[1]	6" Diameter[1]
	1	Indicator Stem - Visual		106050	107951
	1a	Indicator Stem - Control Top		106003	106004
	4	Cylinder		113099	113112
	5	Bearing, Cylinder		102757	102757
*	**6**	**O-ring**	**Nitrile**	N70210	N70210
*	**7**	**O-ring, Cylinder**	**Nitrile**	N70240	N70255
*	**8**	**O-ring, Piston**	**Nitrile**	N70342	N70433
	9	Cap Screw, 1/4-20 x .375" lg.		30-68	30-68
	10	Piston & Spring Assembly	1-1/2"	113680	N/A
			2"	113679	N/A
			2-1/2" - 4"	N/A	113678
*	**11**	**O-ring**	**Nitrile**	N70214	N70219
	12	Yoke	1-1/2"	109823	N/A
			2"	109940	N/A
			2-1/2"	N/A	109928
			3"	N/A	109934
			4"	N/A	109905
	13	Vent Plug[2]		3023957	3023957
	14	Bearing, Main Piston		101995	102052
	15	Bearing, Lifting Piston		109820	109920
	16	Bearing		106047	109919
	17	O-ring	Nitrile	N70222	N70328
	18	Spring, Upper Stem		101946	5901106
	20	Nut, Upper Seat Clean		109822	109918
	22	Main Piston		117215	116472
	23	Upper Seat Piston		111507	111489
	24	Adjusting Sleeve		117439	116469
	26	O-ring	Nitrile	N80026	N90222
	29	O-ring, Lower Seat Piston	Nitrile	N70337	N70427

Complete Actuator Assemblies

Part Description			4" Diameter[1]	6" Diameter[1]
Air-to-Raise	Visual Indicator Stem	1-1/2"	ACT00337	N/A
		2"	ACT00338	N/A
		2-1/2"	N/A	ACT00339
		3"	N/A	ACT00340
		4"	N/A	ACT00341
	Control Top Indicator Stem	1-1/2"	ACT00347	N/A
		2"	ACT00348	N/A
		2-1/2"	N/A	ACT00349
		3"	N/A	ACT00350
		4"	N/A	ACT00351

Notes: PL5027-CH64

* **Recommended Spare Parts**

1. 4-inch diameter actuator for 1-1/2inch and 2-inch valves. 6-inch diameter actuator for 2-1/2 inch and 4-inch valves.
2. Only required for valves without control top

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SUGGESTED ACTION
Leakage		
Leakage from vent/drain with valve closed.	Upper or lower seat ring failure.	Remove valve. Replace seat rings.
	Debris trapped in upper seat or lower seat.	Inspect/change cleaning procedure to correct.
	Upper or lower seat not closed.	Inspect inner and outer stems for galling and burrs on adapter.
		Check actuator function.
	Upper or lower seat clean activated.	Check control sequence.
Leakage from vent/drain with valve open.	Tri-ring on bottom of top seat failed.	Replace seal.
		Inspect inner and outer stems for galling and burrs.
	Small spring not holding upper stem in place.	Check and replace small spring and stems in actuator.
Leakage around yoke.	Internal adapter o-ring failure.	Replace o-ring.
	External adapter o-ring failure.	Replace o-ring.
Leakage through outer stem.	Inner stem o-ring failure.	Replace o-ring.
Operation		
Valve fails to open.	Air pressure too low.	Set air pressure to 72 psi (5 bar) minimum.
	Control failure.	Check control sequence.
		Check control wiring and power source.
Valve fails to close.	Controls failed.	Check control sequence.
		Check control wiring and power source.
Upper seat fails to lift during seat lift.	Lifting piston not adjusted correctly.	Adjust adjusting sleeve. See “Seat Lifting Adjustment” on page 17.
Lower seat fails to lift during seat lift.	Adjusting sleeve not adjusted correctly.	Adjust adjusting sleeve. See “Seat Lifting Adjustment” on page 17.
Actuator moves when valve opened.	Clamp loose.	Tighten clamp with valve open.
Electrical		
No valve closed or open indication.	Lower switch not adjusted properly.	Adjust switch. See control module publications 95-03077 (3-Piece) or 95-03083 (2-piece).
No valve open signal.	Upper switch not adjusted.	Adjust switch. See control module publications 95-03077 (3-Piece) or 95-03083 (2-piece).
Moisture in switch housing.	Missing and/or damaged gaskets.	Replace gaskets.